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BAIROIL/DAKOTA CARBON DIOXIDE PROJECTS

FINAL ENVIRONMENTAL IMPACT STATEMENT

FEBRUARY 1986

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Bureau of Land Management
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BAIROIL/DAKOTA CARBON DIOXIDE PROJECTS

FEBRUARY 1986

Prepared by
Bureau of Land Management

Hillary A. Oden

State Director, Wyoming

READEX FICHE

COVER SHEET

Bairoil/Dakota Carbon Dioxide Projects
Environmental Impact Statement

( ) Draft (X) Final

Lead Agency

U.S. Department of the Interior, Bureau of Land Management

Cooperating Agencies

U.S. Department of Army
Corps of Engineers
U.S. Department of Agriculture
Forest Service

State of Montana
Department of Natural Resources and Conservation
Facility Siting Bureau

Counties That Could Be Affected

Wyoming
Campbell, Carbon, Converse, Fremont, Johnson, Natrona, Sheridan, and Sweetwater counties
Montana
Carter, Custer, Dawson, Fallon, Powder River, and Richland counties
North Dakota
Billings, Dunn, Golden Valley, McKenzie, Montrail, Stark, and Williams counties
South Dakota
Butte, Lawrence, and Pennington counties

Abstract

The draft and final environmental impact statements (EISs) assess the environmental consequences of federal approval of the Bairoil/Dakota Carbon Dioxide CO_2 Projects proposed by Exxon Company USA, Amoco Production Company, and Shell Pipe Line Corporation. Major project components are two parallel pipelines (one for Exxon and one for Amoco), which would carry CO_2 from Rock Springs to Bairoil, Wyoming; an Amoco gas plant and enhanced oil recovery project in the Bairoil oil field; an Exxon CO_2 pipeline beginning at Bairoil and ending at a point near Tioga, North Dakota; and a Shell CO_2 distribution pipeline along the Cedar Creek Anticline.

Based on the issues and concerns identified during the scoping process, the EISs focus on impacts to socioeconomics, soils and reclamation, water resources, and wildlife. The EISs analyze direct and indirect impacts to various resources from the project as well as cumulative impacts. Cumulative impacts are impacts that would occur from the Proposed Action or alternatives plus other interrelated projects existing or planned for development in the area of influence, during the analysis period.

(See the Summary for an overview of impacts that would occur from construction and operation of the project.)

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Date EIS Made Available to EPA and the Public

Draft: September 13, 1985
Final: February 14, 1986

The purpose of this final Environmental Impact Statement (EIS) is to supplement the draft EIS, which was published September 13, 1985. Reviewed together, the draft and final EISs incorporate the analyses of the affected environment and potential environmental consequences resulting from construction and operation of the Bairoil/Dakota Carbon Dioxide Projects.

This final EIS should not be considered as a complete EIS, nor as a decision document. The final contains a revised Summary; Comparative Analysis (Section 1); Provisions and Measures, Map, and Memorandum of Agreement (cultural resources) appendices. In addition, this final EIS contains some new material. The Errata Summary, Section 2, contains corrections, text changes, and additions to the draft EIS resulting from the comments received during the review period. Section 3, Consultation and Coordination, contains background information, consultation and coordination processes, comments from public hearings and comment letters received during the 60-day review period, and responses to comments. Public hearing comments have been paraphrased, while comment letters on the draft EIS have been reprinted verbatim, except for attachments. Responses to comments follow immediately after each public hearing comment or letter.

The Montana Department of Natural Resources and Conservation, a cooperating agency, prepared a supplement to this EIS, under the requirements of the Montana Environmental Policy Act. The supplement is incorporated into this EIS by reference. (Comments addressing the State of Montana Supplement have been excerpted and responses provided.)

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FINAL ENVIRONMENTAL IMPACT STATEMENT
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Department of Natural Resources and Conservation,
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State of Wyoming

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and various state agencies

NOTE: Errata changes to the State of Montana Supplement and responses to comments on the State of Montana Supplement were provided by the State of Montana, Department of Natural Resources and Conservation (DNRC). State of Montana stipulations, Appendix 1 o this environmental impact statement, were also provided by DNRC.

Exxon Company USA (Exxon), Amoco Production Company (Amoco), and Shell Pipe Line Corporation (Shell) have applied to the Bureau of Land Management (BLM), under Section 28 Mineral Leasing Act of 1920, for permission to build pipelines to transport carbon dioxide (CO_2) across public land. In addition to building a CO_2 spur pipeline, Amoco proposes to begin enhanced oil recovery using CO_2 in its Bairoil, Wyoming oil field. The recovery project would include a gas separation plant, CO_2 distribution and collection pipelines in the oil fields, a pipeline to carry the produced oil from the field to the existing Frontier pipeline in Wyoming, and an oil storage tank at the point the oil pipeline joined the Frontier pipeline. For the purpose of the draft and final environmental impact statements (EISs), the projects proposed by each of these separate companies have been combined and analyzed as the companies' Proposed Action.

Exxon plans to build two segments of a CO_2 pipeline that would carry 450 to 500 million cubic feet per day (MMcfd). One segment would transport CO_2 from the Rangely CO_2 pipeline near Rock Springs to Bairoil, Wyoming and the other, from Bairoil to near Tioga, North Dakota.

Amoco's proposed pipeline would carry between 150 and 200 MMcfd of CO_2 to the Bairoil plant. The CO_2 pipeline planned by Amoco is in addition to the proposal by Exxon to transport CO_2 to the Bairoil oil recovery project. Negotiations are still underway between the two companies as to which company will actually transport the CO_2 to the Bairoil oil recovery project. (Amoco and Exxon have recently agreed to have Exxon build a single CO_2 pipeline beginning at the existing Rangely CO_2 pipeline and extending 19 miles north of Bairoil. Amoco would build a 12-inch diameter spur pipeline to the Bairoil fields. See Letters Requiring No Response, Number 27, in Section 3 of this EIS.)

Shell proposes to build a CO_2 distribution pipeline that would move CO_2 into oil fields along the Cedar Creek Anticline near Baker, Montana for use in oil recovery. Shell has not decided on a CO_2 source yet, but CO_2 could come from Exxon or the McElmo Dome CO_2 fields near Cortez, Colorado.

Construction of the Exxon and Amoco projects would begin in the spring of 1986. (Shell would not begin construction before the spring of 1987.) If construction of the pipelines was not completed during 1986, it would be finished during the summer of 1987. The Bairoil plant would be completed in December 1987.

In addition to the Proposed Action, the draft and final EISs analyze potential social, economic, and environmental impacts of the U.S. Highway 85, Single Bairoil Pipeline, and No-Action alternatives. In addition to these alternatives to the Proposed Action, a short optional routing, identified as the Crooks Gap Option, is analyzed. See Appendix 1 of the draft EIS for maps detailing the locations and milepost (MP) numbers for the projects and Appendix 2 of the final EIS for revised maps.

SUMMARY

ISSUES

During the scoping process, several general concerns were raised relating to impacts on various aspects of the socioeconomic environment, soils and vegetation, reclamation, wildlife, water resources, roads, rancher's and farmers' agricultural activities and rights in negotiating easements, and the State of Montana's concern that costs not exceed benefits. Section 3, Consultation and Coordination, lists the resource concerns and information on the scoping process.

The only known CO_2 market near the Proposed Action route is at Bairoil, Wyoming. Exxon and Amoco are continuing to negotiate a contract for Exxon to deliver CO_2 to Bairoil. If markets for CO_2 do not develop north of Bairoil, permission to cross public lands would not be given to Exxon or Shell, under this proposal. If markets develop in the future, this EIS would be reviewed and updated, as necessary, before permission was granted to build.

MAJOR IMPACTS AND MITIGATION

The EISs concentrate on potential impacts from the projects as proposed by Amoco, Exxon, and Shell. The analysis assumes the BLM Required General Resource Measures and Required Reclamation and Erosion Control Procedures would be effectively used on lands administered by BLM. Other state and federal agencies, which administer land that would be crossed by the proposed projects, also have required mitigation. The Montana State Land Board has the authority to require reclamation measures on state lands in Montana including the beds of navigable rivers. As a consideration for granting easements across state lands, the State Land Board may also consider whether reclamation procedures on adjoining lands would be sufficient to prevent impacts on state lands. These measures are comparable to those required on Montana state lands and would prevent impacts to the public, public lands, and other private land holdings. Appendix 1 of this EIS lists measures required by the various agencies.

Commitments made by each of the three companies to use BLM mitigation on private lands was assumed in the analysis. Exxon made a commitment to apply BLM measures unless landowners disagreed, and Amoco agreed to apply BLM measures if the private landowners wanted to use them. Shell prefers to work with private landowners in developing mitigation, but finds BLM measures an acceptable alternative. Therefore, landowners are encouraged to review these protective measures and decide which measures they wish to be used on their own lands.

The measures were developed to lessen or avoid impacts to various physical resources. Soils and vegetation would be protected by the saving of topsoil requirement and reclamation and erosion control procedures. Impacts to agriculture would be lessened by the requirement to leave gaps along the construction trench, which would allow livestock movements, and by the companies' proposal to limit the time pipeline trenches would be

open. In addition, the companies are required to control weeds, as needed, after construction.

Among other required measures to protect the roads to be used, the companies must comply with all road regulations or stipulations required by private landowners, municipalities, counties, states, and federal agencies. To protect water resources, existing bridges must be used; culverts on temporary crossings, installed; and regulations needed to obtain and dispose of water used in testing the strength of the pipeline, followed.

In addition to other measures, wildlife would be protected by prohibiting construction near habitat being used by species for survival (crucial habitat). Surveys for any threatened or endangered species that may occur in the area must also be completed. Cultural and historic resources are protected by procedures to identify, evaluate, and protect these resources. Paleontological (fossil) resources are protected in a manner similar to cultural resources.

Impacts to visual resources (scenic views and areas) would be lessened by required use of paint colors on project facilities, which are selected to blend into the background. Reseeded areas would include adapted native plant species (grasses and shrubs). Wastes would be controlled by measures requiring use of authorized disposal sites.

As identified in Appendix 1, there are many other measures designed to lessen or avoid impacts to these resources and other aspects of the environment.

The draft and final EISs analyze potential social, economic, and environmental impacts of the Proposed Action and alternatives to the Proposed Action. The analysis was used to help federal decision makers determine whether or not they should grant permission to the companies to cross public lands for this project. The analysis concentrates on construction impacts, including the area disturbed and the increases in jobs and people, and operation impacts, including emissions to the air. Levels of significance were set for each resource (Chapter 2, draft EIS). Potential impacts from the projects were compared with these levels to determine significance or insignificance. The analysis revealed that no significant adverse impacts would occur to the natural resources or to human populations within the area, beyond construction. The projects, however, would cause some short-term, construction-related impacts.

Neither the Proposed Action nor the alternatives would affect any federally listed threatened or endangered plant species, areas of critical environmental concern, sole sources of drinking water, prime or unique farmlands, in any of the counties that would be affected in Wyoming, Montana, or North Dakota. Neither the Proposed Action nor the alternatives would have any known effects on the cultural, historical, or religious values of Native Americans. Access to the Fort Berthold Indian Reservation would also not be affected.

SUMMARY

Socioeconomics

The Proposed Action, Single Bairoil Pipeline Alternative, and U.S. Highway 85 Alternative would similarly affect social and economic conditions during the 1- to 2-year construction period. Many insignificant impacts (those less than the identified significance level) and a few significant impacts (those exceeding the significance criteria) would result. The following significant impacts would occur during construction and operation of the Proposed Action or alternatives:

Element	Amount	Percent Increase Over Baseline
Proposed Action or Alternatives		
Construction Population Increase in Bairoil	60 persons	22.2
Tax Revenues during Construction (1986)		
Montana		
Carter County	$ 210,000	38.3
Carter County Schools	$ 330,000	37.0
North Dakota		
Golden Valley County Schools	$ 19,000	12.5
Tax Revenues during Operation (1990-peak year)		
Wyoming		
Sweetwater County	$ 2,300,000	37.1
Montana		
Carter County	$ 380,000	69.1
Carter County Schools	$ 610,000	68.5
North Dakota		
Golden Valley County Schools	$ 30,000	19.7

SUMMARY

Element	Amount	Percent Increase Over Baseline
Cumulative Impacts (Proposed Action plus interrelated projects)		
Construction Employment Increase		
Wyoming		
Sweetwater County	3,360 persons	14.0
Construction Population Increase		
Wyoming		
Sweetwater County	5,770 persons	12.9
Green River	1,620 persons	11.4
Rock Springs	3,270 persons	15.8
Bairoil	60 persons	22.2
Gillette	2,480 persons	13.0
Tax Revenues during Construction		
Wyoming		
Sweetwater County	$ 1,460,000	24.2
Green River	$ 1,120,000	13.5
Rock Springs	$ 1,700,000	13.3
Bairoil	$ 122,000	19.8
Campbell County	$ 6,210,000	16.2
Gillette	$ 2,660,000	10.7
Montana		
Carter County	$ 210,000	38.3
Carter County Schools	$ 330,000	37.0
North Dakota		
Golden Valley County Schools	$ 19,000	12.5
Tax Revenues during Operation		
Wyoming		
Sweetwater County	$ 3,000,000	48.4
Sweetwater County Schools	$ 4,470,000	10.0
Campbell County	$ 5,170,000	10.9
Campbell County Schools	$ 8,970,000	14.0

SUMMARY

Element	Amount	Percent Increase Over Baseline
Montana		
Carter County	$ 380,000	69.1
Carter County Schools	$ 610,000	68.5
North Dakota		
Golden Valley County Schools	$ 30,000	19.7

Population would increase by 50 persons or 18.5 percent over baseline during construction of the Single Bairoil Pipeline Alternative.

Population would increase by 50 persons or 18.5 percent over baseline during construction of the Single Bairoil Pipeline Alternative.

Cumulative impacts to housing, public services and facilities, and quality of life in Green River and Rock Springs, Wyoming would occur mainly from Exxon's Shute Creek gas separation plant, in southwestern Wyoming. Under the conditions required by the permits issued by the Wyoming Office of Industrial Siting Administration, those cumulative impacts appear to be sufficiently mitigated. Thus, impacts may be insignificant since the towns also have enough housing and other needed facilities, as well as the experience in handling growth-related problems. Impacts to Bairoil, Wyoming would be significant, however.

Soils and Vegetation

Soil loss and reduction of soil productivity from the Proposed Action, the U.S. Highway 85 Alternative, or the Single Bairoil Pipeline Alternative would be insignificant on public lands, with the required use of the erosion control, reclamation, and revegetation program outlined in Appendix 1. Impacts on private land would depend on how effectively the companies apply these measures. (Private landowners are encouraged to study these measures and use them as a guideline for determining which measures they want to require on their own lands, before giving permission to the company to cross.)

Accelerated wind and water erosion would cause some unquantified soil loss until erosion control

measures could be implemented. Reclamation would be difficult in areas with less than 9 inches average annual rainfall (thesouthern third of the project area), in areas with slopes of 15 percent or more, on shallow soils over bedrock, and on soils with unfavorable erosion or plant growth properties (sensitive soils). (Reestablishing ground cover to the extent it existed before building the project may take longer than 1 to 2 years.) Of the 9,488.6 acres disturbed by the Proposed Action, 796.8 acres of sensitive soils and terrain would be disturbed, and 2,718 acres would be located in areas with less than 9 inches average annual precipitation.

The U.S. Highway 85 Alternative would disturb 9,533 acres, including 778.8 acres of sensitive soils and terrain, and 2,718 acres in areas with less than 9 inches average annual precipitation.

The Single Bairoil Pipeline Alternative would disturb 8,802.6 acres, including 703.7 acres of sensitive soils and terrain; 2,534 acres would be located in areas with less than 9 inches average annual precipitation.

Agriculture

The Proposed Action would cause a 1- to 5-year loss of enough rangeland forage to feed 785 cows for 1 month and a loss of enough rangeland forage to feed 20 cows for 1 month for the life of the project. This loss of forage would be spread along the entire length of the projects and would not significantly affect any single grazing allotment. Although 1,897 acres of cropland would be removed for 1 year, the impacts would be insignificant since they represent less than 1 percent of the cropland in the area. Impacts from the Single Bairoil Pipeline Alternative would be the same as those from the Proposed Action. The U.S. Highway 85 Alternative would remove 1,819 acres of cropland from production for 1 year.

Transportation Networks

During construction of the Proposed Action, the U.S. Highway 85 Alternative, or the Single Bairoil Pipeline Alternative local traffic volume would significantly increase and traffic flow on some roads, serving as access to the pipeline routes and plant site, would be impeded.

Water Resources

Impacts to water resources from the Proposed Action, the U.S. Highway 85 Alternative, or the Single Bairoil Pipeline Alternative would be the same, although the number of stream crossings would vary slightly. Building a pipeline across flowing streams would cause sedimentation and probable violation of water quality standards for about a week at the crossing site and for 1 to 2 miles downstream. Construction across Lake Sakakawea, North Dakota would take about 2 months. The lake bottom would be in a disturbed condition for about a month of this time. Trenching beneath the lake would be limited to within 100 to 300 yards of the shoreline. This limit on trenching, along with the low flow rate in the lake, would limit suspended sediment increases to the area around the disturbance.

The probability of a CO_2 leak beneath a stream would be very low--one chance in 100,000--since most stream crossings are 0.1 mile or less (Chapter 1 of the draft EIS). Any leak could potentially increase suspended solids and CO_2 concentrations and lower pH and stream temperatures. State water quality standards for turbidity, pH, and temperature change could be violated, but only the turbidity would be measurable for a short distance downstream. All concentrations and impacts would gradually dissipate as soon as the block valves were shut and CO_2 emptied out of the pipeline segment between them.

Wildlife

Impacts to wildlife would be similar and insignificant under all alternatives, including the Proposed Action. Few acres of habitat needed for species survival (crucial habitat) would be crossed, and construction would be prohibited during major habitat use (such as breeding, fawning, or calving periods). Forage losses from vegetation disturbance would be insignificant and last only 1 to 5 years. Although poaching would increase, it would not be significant.

A pipeline break or CO_2 leak, although unlikely, could kill a few fish and other aquatic species by supersaturating an area of water with CO_2. The block valves on either side of some stream crossings, including the Green River crossings at MP 38R and MP 2.6, would limit the amount of CO_2 that would be released. The tendency of fish to avoid bubbles and foreign substances in water would limit the number of fish killed by CO_2. The potential for more fish to be killed would be somewhat higher in Lake Sakakawea because it lacks strong currents. However, the chance of a leak or rupture occurring under the lake is less than under land, since most ruptures or leaks are caused by heavy equipment working on top of or near a pipeline.

Building and operating the proposed projects could potentially affect some threatened, endangered, or sensitive animal species. Since construction would disturb prairie dog habitat, the black-footed ferret could be harmed. In addition, the narrow-footed Hygrotus diving beetle (Category II) proposed for listing by the Fish and Wildlife Service, could be affected by changes in their habitat. The companies will be required to take steps to protect these species as part of the conditions attached to the Federal Government's permission to build the project on or across public land.

Although whooping cranes, peregrine falcons, bald eagles, and piping plover occur within the general area, the projects are not expected to affect them. No other threatened or endangered animal species are known to occur in the project area, as shown in the Fish and Wildlife Service Biological Opinion, Appendix 3 of this EIS.

Cultural Resources

Because the exact locations of the pipelines and associated facilities are unknown for the Proposed Action and the alternative routes, specific

impacts to cultural resources cannot be determined. As a condition of receiving permission to build the projects, the companies will be required to take steps to protect cultural resource values on all lands. (See Appendix 4 for Final Memorandum of Agreement on cultural resources.)

Air Quality

Pipeline and plant construction of the Proposed Action, U.S. Highway 85 Alternative, or Single Bairoil Pipeline Alternative would temporarily and insignificantly increase air pollution. An estimated 6,473 tons of dust would be produced by the Proposed Action, 6,505 tons by the U.S. Highway 85 Alternative, and 6,020 tons by the Single Bairoil Pipeline Alternative. The impacts would not affect regional air quality because they would be dispersed over the length of the project.

Operation of the new Bairoil gas separation plant would cause emissions of 45 tons per year of sulfur dioxide (SO_2), which is much less than the 509 tons per year of SO_2 currently released by the existing Wertz plant in the same area. The existing plant would be replaced by the new plant and would be shut down when the new one began operating.

Mineral and Paleontological Resources

The Proposed Action pipeline route would cross several coal deposits. The proposed 50-foot-wide, permanent right-of-way would cover about 27 million tons of surface mineable subbituminous coal, northeast of Gillette. If the area was leased and mined, the pipeline would probably be relocated. The Proposed Action would, however, preclude from recovery 16 million tons of high quality coal. Other areas of lesser quality coal would be crossed, but the coal would probably not be developed within the useful lifetime (30 to 35 years) of the Proposed Action. The alternatives would cross similar coal resources.

The three alternatives would cross 246.5 miles of geologic formations that have a high probability of containing paleontological (fossil) resources.

Since paleontological resources are not well-inventoried, the companies would be required to take steps--similar to those required for cultural resources--to protect these resources. Knowledge of fossils would probably be enhanced by inventory or construction finds. Resources not located by surface examination or noticed during construction would probably be destroyed.

Visual Resources

Vegetation clearings needed for the Proposed Action and facilities would create visual contrasts with the existing vegetation and landform that would conflict with Visual Resource Management (VRM) objectives for 550 acres of lands categorized as VRM Classes II and III. Of the total, 4 acres would be in conflict for the life of the project. Such conflicts would occur in 11 areas. The scenic views in these areas would be changed; people looking at these areas would notice a change in vegetation and see new facilities, such as valves and other pipeline

facilities, that did not previously exist in the area. The pipeline route would be visible until the area was successfully revegetated and shrubs had regrown to preconstruction heights and densities (10 years or more).

Impacts from the U.S. Highway 85 Alternative would be similar to those from the Proposed Action. The Single Bairoil Pipeline Alternative would cause impacts to 423 acres, a decrease in acreage at two areas and an elimination of all impacts between MP 37.5R and 38.5R and between MP 48R and 49R.

Recreation Resources

The Proposed Action, U.S. Highway 85 Alternative, and Single Bairoil Pipeline Alternative would not cause any significant impacts to recreation sites or users. Some camping by construction workers is expected to occur. Because populations in communities would not increase significantly except at Bairoil, Wyoming, demand for urban and nonurban (hunting, fishing, sightseeing) recreation resources is not expected to increase significantly. Any increases in demand would be temporary, lasting no longer than one or two summers.

Wilderness

No significant impacts would occur to wilderness study areas from building or operating the Proposed Action, the U.S. Highway 85 Alternative, or the Single Bairoil Pipeline Alternative.

Land Use Plans, Controls and Constraints

There are no known conflicts with any federal, state, or local plans.

Health and Safety

CO_2 gas would pose no health hazards to either oil field workers or the public except in the event of a large rupture. Since the pipeline would be under high pressure, 1,800 to 2,400 pounds per square inch (psi), an accidental rupture could pose a physical hazard. Flying rocks and pieces of broken pipe could be fatal if they struck persons nearby. If trapped in the hole around the pipe, such persons could be asphyxiated or frozen by the rapidly expanding CO_2.

Hydrogen sulfide (H_2S) is present in the water, oil, and gas mixture at the Lost Soldier and Wertz oil fields at Bairoil, Wyoming. Risk to the general public is now low and is not expected to change, and risk to the well field workers would not change.

AGENCY PREFERRED ALTERNATIVE

The Agency Preferred Alternative was selected by BLM and the cooperating agencies during preparation of the EIS: the Forest Service and the Montana Department of Natural Resources and Conservation.

The Agency Preferred Alternative is the Single Bairoil Pipeline Alternative, which involves--

SUMMARY

- granting rights-of-way for one CO_2 pipeline from MP 26 of the existing Rangely CO_2 pipeline near Rock Springs, Wyoming to MP 111, at its junction with the Bairoil spur route; one 20-mile-long spur route from MP 111 to Bairoil, Wyoming; one CO_2 pipeline from MP 111 to Tioga, North Dakota (at this point, the same as the Proposed Action route); and associated facilities for all route segments;
- granting rights-of-way for the Proposed Action route in North Dakota;
- granting rights-of-way for all facilities on public land needed to permit construction and operation of the proposed Bairoil gas separation plant;
- granting rights-of-way for the CO_2 distribution pipeline near Baker, Montana and associated facilities.

SECTION 1
COMPARATIVE ANALYSIS

This section compares the environmental impacts of the Proposed Action, U.S. Highway 85 Alternative, Single Bairoil Pipeline Alternative, and Crooks Gap Option. Table 1, developed from information in Chapter 2 of the draft environmental impact statement (EIS), compares most of the impacts, even if they would be insignificant or identical. Some impacts are not compared but are discussed in Chapter 2 of the draft EIS.

The State of Montana, Department of Natural Resources and Conservation (DNRC), has reviewed the need for the proposed project and the benefits and costs of the proposed alternatives. DNRC concluded that while great uncertainty surrounds the benefits and marketability of the project, if the project turns out to be marketable, the benefits are likely to greatly outweigh the costs. Furthermore, the project would not likely be built unless marketability was assured. (See Appendix 4 of the draft EIS for the economic analysis.)

RESOURCE COMPARISON

Impacts of the Proposed Action and U.S. Highway 85 Alternative would only differ slightly and would not differ for socioeconomics; transportation networks; water resources; visual resources; recreation; wilderness; land use plans, controls, and constraints; and parts of some of the remaining resource categories. The Single Bairoil Pipeline Alternative would cause impacts similar to the Proposed Action and U.S. Highway 85 Alternative, but some resources would be less affected by the Single Bairoil Pipeline Alternative because it would cause less disturbance along Spread 1. The U.S. Highway 85 Alternative would be 3.7 miles longer than the Proposed Action, whereas the Single Bairoil Pipeline would be 23 miles shorter. The U.S. Highway 85 Alternative would disturb 44.4 more acres of soils and vegetation than the Proposed Action and the Single Bairoil Pipeline Alternative, 686 less. The Proposed Action would disturb more sensitive soils than either of the alternatives: 18 more acres than the U.S. Highway 85 Alternative and 93.1 more acres than the Single Bairoil Pipeline Alternative. The U.S. Highway 85 Alternative would cause a short-term loss of 15 more animal unit months (AUMs) of forage than the Proposed Action and the Single Bairoil Alternative, 63 less. Long-term losses would be the same for all alternatives.

The U.S. Highway 85 Alternative would disturb 78 fewer acres of cropland than the Proposed Action, while the Single Bairoil Pipeline Alternative would disturb the same number of acres as the Proposed Action.

The Proposed Action would cross 18 perennial streams 26 times at 22 locations; the U.S. Highway 85 Alternative would require one more crossing than the Proposed Action, and the Single Bairoil Pipeline Alternative would require four fewer. Over the long term, all three alternatives would need the same amount of water for the Bairoil plant and enhanced oil recovery program. The alternatives would all cross Lake Sakakawea at the same location.

ERRATA SUMMARY

Table 1
Bairoil/Dakota CO_2 Projects
Comparative Analysis

Element	Proposed Action	U.S. Highway 85 Alternative		Single Bairoil Pipeline Alternative	
Pipeline length (miles)					
Main Pipeline	666.8	670.5	(+3.7)	643.8	(-23)
Bairoil Spur	20.0	20.0	(0)	20.0	(0)
Cedar Creek Distribution Pipeline	65.0	65.0	(0)	65.0	(0)
Total miles:	751.8	755.5	(+3.7)	728.8	(-23)
Socioeconomics					
Population increase in Bairoil	60/22.2%	60/22.2%	(0)	50/18.5%	(-10/-3.7%)
Significant local government revenue increase-construction					
Montana					
Carter County	$210,000--38.3%	$210,000--38.3%	(0)	$210,000--38.3%	(0)
Carter County schools	330,000 -37.0%	330,000--37.0%	(0)	330,000--37.0%	(0)
North Dakota					
Golden Valley County schools	$19,000--12.5%	$19,000--12.5%	(0)	$19.000--12.5%	(0)
Significant local government revenue increase-operation					
Wyoming					
Sweetwater County	$2,300,000--37.1%	$2,300,000--37.1%	(0)	$2,300,000--37.1%	(0)
Montana					
Carter County	$380,000--69.1%	$380,000--69.1%	(0)	$380,000--69.1%	(0)
schools	610,000--68.5%	610,000--68.5%	(0)	610,000--68.5%	(0)
Golden Valley County schools	$30,000--19.7%	$30,000--19.7%	(0)	$30,000--19.7%	(0)
Soils and Vegetation					
Acres of soils & vegetation disturbed during construction (1 yr) and short-term vegetation impacts (2-5 years)	9,488.6	9,533.0	(+44.4)	8,802.6	(-686.0)
Acres of soils occupied by surface facilities	223.0	223.0	(0)	215.3	(-7.7)
Acres of sensitive soils and terrain affected	796.8	778.8	(-18)	703.7	(-93.1)
Acres of disturbance in areas with less than 9 inches average annual precipitation	2,718.0	2,718.0	(0)	2,534.0	(-184.0)
Agriculture					
Forage loss (AUMs/yr) short-term (2-5 years)	785	800	(+15)	722	(-63)
Forage loss (AUMs/yr) for project life (30 years)	20	20	(0)	20	(0)
Cropland disturbed for 1 year (acres)	1,897	1,819	(-78)	1,897	(0)
Cropland converted to other uses by project facilities	2	2	(0)	2	(0)

EIS TABLE CHANGES

Table 1 (Continued)
Bairoil/Dakota CO_2 Projects
Comparative Analysis

Element	Proposed Action	U.S. Highway 85 Alternative		Single Bairoil Pipeline Alternative	
Transportation					
Segments of major roads significantly affected by traffic	U.S. Highway 287; Wyoming State Highways 789, 220; U.S. Highways 20, 26; Wyoming State Highways 191, 50, 220, 59; Montana State Highways 544, 59, 323, and 7; North Dakota Federal Aid Systems 1711, 1744, 1746, 0419, 0408, 200, and 1804; North Dakota State Highway 16; county and local roads.	Same as Proposed Action plus U.S. Highway 85, and North Dakota State Highways 73, and 220		Same as Proposed Action	
Water Resources					
Water requirements (ac-ft/yr)	4,614	4,614	(0)	4,614	(0)
Perennial stream crossings*	26	27	(+1)	22	(-4)
Lake crossings	1	1	(0)	1	(0)
Wildlife					
Elk crucial winter range and calving area (acres)	12	12	(0)	12	(0)
Crucial mule deer winter range (acres)	186	186	(0)	40.5	(-145.5)
Mule deer winter concentration area (acres)	36	36	(0)	36	(0)
Crucial pronghorn winter range (acres)	828	828	(0)	501	(-327)
Pronghorn fawning habitat	144	144	(0)	0	(-144)
Crucial white-tailed deer winter range (acres)	36	36	(0)	36	(0)
Bighorn sheep lambing range (acres)	168	168	(0)	168	(0)
Sage grouse winter range (acres)	42	42	(0)	37.5	(-4.5)
Sage grouse breeding/ nesting habitat (acres)	312	312	(0)	243	(-69)
Sharp-tailed grouse breeding/ nesting habitat (acres)	24	24	(0)	24	(0)
Raptor nesting habitat (acres)	648	648	(0)	525	(-123)
Bald eagle winter habitat (acres)	156	156	(0)	156	(0)
Prairie dog colonies (acres)	501	501	(0)	394	(-107)
Feral horse range	1,452	1,452	(0)	1,131	(-321)

ERRATA SUMMARY

Table 1 (Continued)
Bairoil/Dakota CO_2 Projects
Comparative Analysis

Element	Proposed Action	U.S. Highway 85 Alternative		Single Bairoil Pipeline Alternative	
Cultural Resources					
Known sites	224	229	(+5)	219	(-5)
Crossing of historic trails and roads (some crossed more than once)	27	27	(0)	23	(-4)
Air Quality					
Fugitive dust from construction (tons produced)	6,473	6,505	(+32)	6,020	(-453)
Bairoil Plant emissions (tons per year SO_2)	45	45	(0)	45	(0)
Minerals/Paleontological Resources					
Coal precluded from recovery during pipeline lifetime (millions of tons)	16	15	(-1)	16	(0)
Low paleontological sensitivity (miles)	245.0	255.0	(+10)	245.0	(0)
Moderate paleontological sensitivity (miles)	285.5	252.5	(-6)	258.5	(0)
High paleontological sensitivity (miles)	246.5	246.5	(0)	246.5	(0)
Visual Resources					
Number of areas with significant resources	11	11	(0)	9	(-2)
Acres significantly affected	550	550	(0)	424	(-126)
Recreation Resources	Urban-related recreation opportunities would receive impacts during construction phase in Bairoil, Wyoming	Same as Proposed Action		Same as Proposed Action	
Wilderness	No significant adverse impacts	No significant adverse impacts		No significant adverse impacts	
Land Use Plans, Controls, and Constraints	No conflict	Same as Proposed Action		Same as Proposed Action	

Table 1 (Concluded)
Bairoil/Dakota CO_2 Projects
Comparative Analysis

Element	Proposed Action MP 111-124	Crooks Gap Option MP 111-129 CG	
Pipeline length (miles)	13	18	(+5)
Soils and Vegetation			
Acres of soils and vegetation disturbed during construction (1 yr) and short-term vegetation impacts (2-5 years)	156	216	(+60)
Acres of sensitive soils and terrains affected	74.4	15.6	(-58.8)
Acres of disturbance in areas with less than 9 inches average annual precipitation	0	156	(+156)
Agriculture			
Forage loss (AUMs/yr) short-term (2-5 years)	17	20	(+3)
Water Resources			
Perennial stream crossings	3	1	(-2)
Wildlife			
Elk Crucial Winter Range and Calving Area (acres)	12	0	(-12)
Feral horse range (acres)	156	216	(+60)
Sage grouse nesting habitat (acres)	0	25	(+25)
Prairie dog colonies (acres)	24	0	(-24)
Cultural Resources			
Known sites	19	3	(-16)
Historic trails and roads crossed	0	1	(+1)
Paleontological Resources			
Moderate sensitivity (miles)	8.9	12	(+3.1)
Low sensitivity (miles)	4.1	6	(+1.9)

Numbers in parentheses show the differences of the alternative compared with the Proposed Action.

*The Green River at MP 2.6 would be crossed twice at the same location, once by Exxon and once by Amoco. Crooks Creek would be crossed by three pipelines, one Exxon pipeline and two Amoco pipelines.

COMPARATIVE ANALYSIS

The Proposed Action and the alternatives would disturb similar amounts of crucial wildlife habitat. Acres of crucial mule deer and pronghorn winter range, pronghorn fawning habitat, sage grouse winter and breeding/nesting habitat, raptor nesting habitat, feral horse range, and prairie dog colonies would all be less for the Single Bairoil Pipeline Alternative than for the Proposed Action. The Single Bairoil Pipeline Alternative would not affect the Proposed Action segment paralleling the Rangely CO_2 pipeline and would cause less right-of-way disturbance from MP 0.0 to MP. 111.

Cultural resource site information is not uniformly known, but 224 known sites occur along the Proposed Action route, 5 more sites than along the U.S. Highway 85 Alternative route. The segment of the Proposed Action from MP 543 to 622 has 11 sites, mostly lithic scatters; the segment of the U.S. Highway 85 Alternative that would bypass these sites is known to contain 16 sites within the 1-mile-wide corridor, also mostly lithic scatters. The Proposed Action and U.S. Highway 85 Alternative pipelines would cross the same historic roads and trails 27 times. The Single Bairoil Pipeline Alternative would make the same crossings as the Proposed Action except for four crossings of historic roads and trails along the Rangely segment. The Single Bairoil Pipeline Alternative would not affect the five cultural resource sites within the mile-wide corridor along the Rangely segment of the Proposed Action route.

The Proposed Action would create about 6,473 tons of fugitive dust, the U.S. Highway 85 Alternative would create 32 tons more, and the Single Bairoil Pipeline Alternative, 453 tons less. Emissions from the plant would be the same under all three alternatives.

The Proposed Action and the Single Bairoil Pipeline Alternative would preclude developing 16 million tons of lignite in the Carlyle and Dickinson deposits during the life of the project. The U.S. Highway 85 Alternative would preclude developing 1 million fewer tons of lignite than the Proposed Action.

The U.S. Highway 85 Alternative would cross 6 fewer miles of lands with moderate paleontological sensitivity than the Proposed Action. The Single Bairoil Pipeline Alternative would cross the same miles and categories of paleontological sensitivity as the Proposed Action.

Areas and acres of significantly affected visual resources crossed by the Proposed Action and the U.S. Highway 85 Alternative would be the same, 11 areas and 549 acres. The Single Bairoil Pipeline Alternative would cross 2 fewer areas and 126 fewer acres because the areas along the Rangely segments would not be part of the alternative route. In addition, Spread 1 would disturb less area and thus, less acres per mile.

The Crooks Gap Option was developed to bypass the Proposed Action from MP 111 to MP 124. The 18-mile-long route would bypass 13 miles of the Proposed Action route in this area. It would disturb 216 acres of soils and vegetation, 60 more than the Proposed Action segment.

COMPARATIVE ANALYSIS

About 59 fewer acres of sensitive soils would be disturbed by the Crooks Gap Option than the segment of the Proposed Action it would replace. Three more AUMs would be lost by the Crooks Gap Option than along the segment of the Proposed Action it would replace. The Option would cross 156 acres of land receiving less than 9 inches of rainfall, while the segment of the Proposed Action would cross more lands, higher in elevation, with more than 9 inches of rainfall. The Crooks Gap Option would cross two fewer streams than the corresponding segment of the Proposed Action.

The Crooks Gap Option would not disturb any crucial elk winter range or calving areas, while the Proposed Action would disturb 12 acres. Both segments would disturb wild horse range, but the Option would disturb 60 acres more. The Crooks Gap Option would disturb 25 acres of sage grouse nesting habitat, while the Proposed Action segment would not disturb any. The Proposed Action segment would disturb 24 acres of prairie dog colonies while the Crooks Gap Option would disturb none.

The Proposed Action segment would cross 19 known cultural resource sites, 16 more than the Crooks Gap Option which, unlike the Proposed Action segment, would cross an historic trail.

The Crooks Gap Option would cross 3.1 more miles of formations containing moderately sensitive paleontological reserves and 1.9 miles more with low sensitivity than the Proposed Action.

The Crooks Gap Option was not selected because it would disturb more soils and vegetation, AUMs, wild horse range, and sage grouse habitat, among other factors.

COST BENEFIT COMPARISON OF THE PROPOSED ACTION AND NO-ACTION ALTERNATIVE
(Montana Department of Natural Resources and Conservation 1985)

The benefits and costs of the pipeline in relation to the No-Action Alternative cannot now be determined. Measuring the benefits of the project requires an estimate of the demand for CO_2 to be carried by the pipeline. This information will not be known until field tests and evaluations are completed by owners for oil fields targeted as CO_2 markets. Even then, much of the information may be regarded as privileged by field owners and Exxon. As discussed in Appendix 3 of the draft EIS, if the marketability of CO_2 and financial feasibility of the proposed pipeline can be demonstrated, it will indicate that the project would generate greater net benefits than the No-Action Alternative.

A demonstration to the applicants' satisfaction that the project is financially feasible means that the present value of revenues, given the applicants' required rate of return, is greater than the present value of costs. A different benefit-cost calculation would be required to show that the public would be better off with the proposed project than with the No-Action Alternative. The public calculation also would evaluate

the private revenues and costs, but would use a lower discount rate, in part because the social risk is generally lower than the individual risk. This would result in a higher present value for the private revenue stream. In addition, environmental costs and certain consumer benefits would be counted and certain tax benefits would not. This project would have one environmental benefit--the reduction in SO_2 emissions at Bairoil--and no significant detrimental environmental impacts that could not be alleviated. Appendix 3 of the draft EIS indicates that the project would generate net benefits. If CO_2 is marketable, it is likely that the project would be preferable to the No-Action Alternative.

SECTION 2
ERRATA SUMMARY

On the basis of (1) comments received on the Bairoil/Dakota Carbon Dioxide Projects during the public review period and (2) modifications to the Proposed Action or alternative routes, the following revisions have been made. This section also contains corrections of errors made during printing. Specific changes to the draft environmental impact statement (EIS) text appear first, followed by additions or changes to tables. Additions or changes to the State of Montana Supplement appear as the final part of this section.

ERRATA SUMMARY

EIS TEXT CHANGES

Page	Column	Para.	Line	Is:	Should Be:
v	N/A	2	1-2	...are a gas separation plant, which would be built on private land near Bairoil, Wyoming...	...are a gas separation plant, which would be built on federally managed land near Bairoil, Wyoming...
18	left	3	2	...for a CO_2 pipeline right-of-way. Exxon and...	...for a CO_2 pipeline right-of-way and gas treatment plant site. Exxon and...
	right	1	8	-no more than 1 grain hydrogen sulfide (H_2S) per 100 standard cubic feet (0.001 percent):	Deleted.
			13	-no more than 20 grains total sulfur per 100 per standard cubic feet (0.02 percent)	...(0.02 percent) or 0.000223 milliliters/liter (0.223 ppm). The breakout on the sulfur would be 0.001 percent hydrogen sulfide (H_2S) and the rest, carbonyl sulfide.
19	left	1	23	-two microwave repeater stations.	-20 microwave repeater stations; and -fracture arrestors.
		2	8	...and microwave tower at origin point facilities (MP 48.9R)	...and microwave tower at origin point facilities (MP 49R)

EIS TEXT CHANGES

Page	Column	Para.	Line	Is:	Should Be:
20	Figure 1			N/A	Add footnote: Dashed line showing Exxon's activities indicates part-time work during winter.
21	left	1	all	Exxon would build a 643.5-mile-long CO_2 pipeline from the origin point (MP 0.0) to MP 26R of the Rangely CO_2 pipeline to Tioga, North Dakota (MP 643.5). Exxon would also build a 20-mile-long spur to serve Amoco's proposed enhanced oil recovery project at Bairoil, Wyoming. Exxon considers the pipeline to be two projects; the Bairoil pipeline and spur and the Dakota pipeline. For purposes of this EIS, BLM is considering the two pipelines as one proposal totalling 663.5 miles. The first 140 miles would parallel the Frontier pipeline.	Exxon would build a 643.8-mile-long CO_2 pipeline from the origin point (MP 0.0) at MP 26R of the Rangely CO_2 pipeline to Tioga, North Dakota (MP 643.8). (Map 1, Appendix 2 of this final EIS, identifies minor route adjustments.) Exxon would also build a 20-mile-long spur to serve Amoco's proposed enhanced oil recovery project at Bairoil, Wyoming. Exxon considers the pipeline to be two projects; the Bairoil pipeline and spur and the Dakota pipeline. For purposes of this EIS, BLM is considering the two pipelines as one proposal totalling 663.8 miles. The first 140 miles would parallel the Frontier pipeline.
		4	10-11	A total of 156.5 miles of pipeline would be built in North Dakota.	A total of 156.8 miles of pipeline would be built in North Dakota.
22	Figure 2			N/A	Add footnote: Figure shows Exxon's facilities only; it does not include Amoco's proposed 150,000-barrel storage tank.

ERRATA SUMMARY

Page	Column	Para.	Line	Is:	Should Be:
32	right	6	2-3	The tank would be 200 feet long and 32 high...	The tank would be 200 feet long and 32 feet in diameter...
34	right	1	5-6	...near Shell's existing gas treatment plant, several miles north of Baker...	...near Shell's existing crude oil plant, 2 miles north of Baker...
36	left	4	1-2	Fiber optic circuits would be trenched into the pipeline ditch.	Fiber optic circuits would be installed in the pipeline right-of-way.
	right	1	1-2	The composite Proposed Action would be 751.5 miles long...	The composite Proposed Action would be 751.8 miles long...
40	left	P	4	N/A	Add: -drying and cleaning
41	right	4	12	..unexcavated to allow vehicles and equipment to pass.	...unexcavated to allow vehicles, equipment, and animals to pass.
		5	7-8	...in accordance with the American Standards Institute (ANSI) Code B31.8.	...in accordance with either American Institute (ANSI) Code B31.4 or B31.8.
50	left	3	1-2	Casing would be installed....where required...	Casing would be installed....only where required...
51	left	3	10-11	...installing crack arrestors...	...installing fracture arrestors...
		6	1-2	...Shell typically needs in-house contract inspectors...	...Shell typically uses in-house or contract inspectors...
	right	1	17	"...Creek and Little Beaver Creek in Carter County. The..."	"...Creek and Little Beaver Creek in Carter County. Exxon has also applied for permits in Wyoming and North Dakota. The..."

EIS TEXT CHANGES

Page	Column	Para.	Line	Is:	Should Be:
52	right	5	1-2	Shell would add two to four permanent jobs for the operation and maintenance of its distribution pipeline.	Shell would add two to four permanent jobs to its existing staff for the operation and maintenance of its distribution pipeline.
		6	1-2	Once every other week, Exxon, Amoco, and Shell would each inspect their rights-of-way by aerial patrol.	Once every 3 months, weather permitting, Exxon, Amoco, and Shell would each inspect their rights-of-way by aerial patrol.
52 through 53	right left	7 P	3 all	Initially the plant would have a 70 MMcfd capacity for H_2S removal and sulfur recovery, compression, and dehydration. For 3 years, no attempt would be made to remove NGL from CO_2 and the gases would be reinjected. After 10 years, the plant would be expanded to a full operating capacity of 110 MMcfd.	The design capacity of the processing portion of the Bairoil CO_2 gas plant would be 100 MMcfd. At maximum capacity, the plant could sweeten, dehydrate, and compress CO_2, as much as 135 MMcfd, for reinjection. Facilities would have a capacity to separate NGLs and a nitrogen/methane-rich stream from the recycled CO_2. Because of the short time (about 3 years) that the gas rate would exceed 100 MMcfd, fractionation facilities with a capacity of 135 MMcfd would not be economical. Instead, gas volumes exceeding 100 MMcfd would be reinjected.
54	right	4	4-5	However, based on other types of natural gas pipelines...	However, based on natural gas pipelines...
			9	61 percent of 1983 ruptures...	(61 percent of 1983 ruptures...
		5	4-5	...where gas did not explode...	...where gas did not ignite...

ERRATA SUMMARY

Page	Column	Para.	Line	Is:	Should Be:
56	left	1	6-7	At a 50-foot lake, depth supersaturation would occur...	At a 50-foot lake depth, supersaturation would occur...
		3	1-2	When the pipeline and plant project ended in 30 to 35 years...	When the economic life of the pipeline and plant project ended, 30 to 35 years...
58	left	P	4-5	...8,799 acres would be be disturbed under the Single Bairoil Pipeline...	...8,802.6 acres would disturbed under the Single Bairoil Pipeline...
59	left	P	7	"...the route would pass just east of the Theodore Roosevelt National Park (Map 3).	"...the route would pass just east of the Theodore Roosevelt National Park (Map 7).
69	left	3	4	-National Wild and Scenic Rivers,	Deleted.
			6	...floodplains or wetlands.	Deleted.
			12-13	North Dakota State Highways 22, 23, and 73...	North Dakota State Highways 23 and 73...
			18-end	...Montana, or North Dakota (Appendix 6). The Fish and Wildlife Service...	...Montana, or North Dakota (Appendix 6). Two species on the Wyoming data base for the Rocky Mountain Natural Heritage Task Force appeared to have habitat in the vicinity of the Proposed Action: meadow pussytoes (Antennaria arcuata), a Category II species, and large-fruited bladderpod (Lesquerella macrocarpa), a Category IIIC species. Exxon had a consultant check along the corridor for these

EIS TEXT CHANGES

Page	Column	Para.	Line	Is:	Should Be:
69	left (continued)				species, but found no evidence of their appearing in the pipeline corridor. The Fish and Wildlife Service...
	right	2	18-22	Amoco has determined that the landowners should develop their own measures and if they want the BLM General Resource Measures....Amoco will carry them out.	Amoco and Shell have determined that the landowners should develop their own measures and that the BLM General Resource Measures.... would be an acceptable alternative.
77	right	1	4-5	...through mill levies on the pipeline, CO_2 production at the Exxon Shute Creek plant, and...	...through mill levies on the pipeline and...
80	left	1	5-11	The Chevron Phosphate Project would be mitigated by permit conditions applied by the State of Wyoming, Office of Industrial Siting Administration (ISA). ISA permit conditions would also mitigate impacts from the Exxon project and Amoco's enhanced oil recovery project at Bairoil, Wyoming.	Impacts from both the Chevron Phosphate and Exxon La Barge projects would be mitigated by permit conditions applied by the State of Wyoming, Office of Industrial Siting Administration (ISA). ISA permit conditions would also be applied to Exxon's proposed CO_2 pipeline because ISA considers it an extension of the La Barge Project. ISA permit conditions would also mitigate impacts from Amoco's proposed enhanced oil recovery project at Bairoil, Wyoming.
		4	all	Impacts to the quality of life in Bairoil are likely to be insignificant since Bairoil has a small population and was originally built as a construction town.	Although social structures have also been affected in Bairoil, it may be significantly affected because of its small, permanent population.

ERRATA SUMMARY

Page	Column	Para.	Line	Is:	Should Be:
81	left	6	10	...and a frost-free season of 110 to 120 days.	...and an average frost-free season of 80 to 110 days.
94	left	1	9	...Montana State Highways 544, 59, 277, 327...	...Montana State Highways 544, 59, 277, 323...
	right	3	1-10	The main proposed route would cross 17 perennial streams 21 times at 19 locations, including their 100-year floodplains, plus Lake Sakakawea on the main stem of the Missouri River. (See Table 36 for perennial streams that would be crossed by the Proposed Action alignment.) The Proposed Action would cross the Green River once at MP 38.1R and twice at MP 2.6--once each by Amoco and Exxon. It would also cross Crooks Creek twice at MP 109.5--once each by Amoco and Exxon.	The combined Proposed Action would cross 18 perennial streams, 26 times at 22 locations, including their 100-year floodplains, plus Lake Sakakawea on the main stem of the Missouri River. (See Table 36 for perennial streams that would be crossed by the Proposed Action alignment.) In the original proposal, Exxon and Amoco would each have built a pipeline across two of these locations. At one location, Amoco had proposed two pipelines, and Exxon one, for a total of 26 crossings by the three companies involved.
		4	all	The Bairoil spur portion of the pipeline would cross rolling landscape in the Crooks Creek and Soldier Creek drainages and cross Crooks Creek at MP 3.2S three times--once by Exxon and once each by Amoco's two pipelines. Vegetative cover is mixed sagebrush grass/greasewood saltbush.	Deleted.

EIS TEXT CHANGES

Page	Column	Para.	Line	Is:	Should Be:
95	left	1	1	The Bairoil plant site is a sagebrush flat. The...	The Bairoil spur portion of the pipeline would cross rolling mixed sagebrush grass/ greasewood saltbush. The Bairoil plant site is a sagebrush flat. The...
103	left	5	5-10	Proposed Action would cross the 18 different perennial streams 26 times at 21 locations since the Amoco and Exxon pipelines would parallel each other; three streams would be crossed by two pipelines at the same point but at different times.	The Proposed Action would cross the 18 different perennial streams, 26 times at 22 locations. Because the Amoco and Exxon pipelines would have paralleled each other, two streams would have been crossed by three pipelines at the same point but at different times, and one stream would have been crossed by three pipelines--one of Exxon's and two of Amoco's.
		7	3	...and Dry Creek (MP 143.5)...	...and Dry Creek (MP 149.6)...
	right	3	all	The narrow-footed Hygrotus diving beetle, a Category II candidate species is found in several locations.... along the Proposed Action route.	The narrow-footed Hygrotus diving beetle, a Category II species, is found in several locations....along the Proposed Action route. The ferruginous and Swainson's hawks are another Category II species that could occur along portions of the route.
		5	12	N/A	Add: Because traffic during construction of this project has been estimated to increase significantly over baseline levels (Transportation Networks Section), road kills of

ERRATA SUMMARY

Page	Column	Para.	Line	Is:	Should Be:
103 (continued)					wildlife would probably also increase at the same rate. The losses, particularly of pronghorn and mule deer, would be significant at local levels, but impacts would continue only through construction. Increased signing, employee education, and staggered work hours could reduce the number of animal/ vehicle accidents.
104	right	2	2	...Dry Creek (MP 143)...	...Dry Creek (MP 149.6)...
	left	5	all	Biological aquatic disturbances associated with pipeline construction (including fish spawning and macro invertebrate impacts) are expected to be localized, short term (1 year's reproduction, at most), and insignificant.	Deleted.
105	right	2	1	The piping plover (Category II) is proposed for listing...	The piping plover is listed...
		3	1	N/A	Add new paragraph: Standard stipulations (Appendix 4, page 181 of the draft EIS) would prevent adverse impacts to all raptors along the proposed route, during the nesting season.
106	right	2	8-9	Several areas were excluded from survey for the Class III survey...	Several areas were excluded from the Class III survey...

EIS TEXT CHANGES

Page	Column	Para.	Line	Is:	Should Be:
106	right	4	5-6	The most comprehensive project for inventorying cultural resources...	The most comprehensive inventory for cultural resources...
109	left	6	all	Some historic sites have been reported within or near the project corridor in North Dakota, but exact locations cannot be verified since no site reports exist. Although no written records of the reports have been found, the area should be carefully surveyed for cultural remains.	Some historic sites have been reported within or near the project corridor in North Dakota. However, exact locations cannot be verified since no written records of the reports have been found. The area should, therefore, be carefully surveyed for cultural remains.
	right	1	9	Any impacts or even a portion of the resource base...	Any impacts on even a portion of the resource base...
		2	13-16	Based on....procedures described in Appendix 4, impacts to cultural resources should not be significant.	Based on....procedures in Appendix 4, impacts to cultural resources should be considerably lessened.
118	right	P	7-8	...of moderately sensitive geology (Table 38).	...of moderately sensitive geology (Table 45).
			10-11	...with low sensitivity (Table 46).	...with low sensitivity (Table 45).
126	left	1	10	N/A	Add: The cumulative effects are expected to significantly increase the population of Sweetwater County, Wyoming by about 13 percent (Table 25). This could mean a significant increase in

ERRATA SUMMARY

Page	Column	Para.	Line	Is:	Should Be:
126 (continued)					the demand for hunting and fishing in southwestern Wyoming. These increased demands for wildlife-associated recreation are expected to last up to 2 years until construction is completed.
148	left	5	2-4	...and Wyoming State Highway 789, east of Jefferson City, and about 11 miles of Freeman County Road south of Jefferson City.	...and Wyoming State Highway 789, east of Jeffrey City, and about 11 miles of Fremont County Road, south of Jeffrey City.
149	left	4	11	N/A	Add: All raptors occurring along the proposed route would be protected during the nesting season by standard stipulations to prevent adverse impacts (Appendix 4, page 181, draft EIS).
173	right	3	2-3	...at oil fields in Wyoming, Montana, North Dakota and possibly Alberta.	...at oil fields in Wyoming, Montana, North Dakota, and possibly Saskatchewan.
			6	...at the Shell Cedar Creek fields...	...at the Shell-operated Cedar Creek fields...
174	left	P	1	...Montana, North Dakota, and Alberta.	...Montana, North Dakota, and Saskatechewan.
240	left	8	4	N/A	Add: Rosenberg, Rob. 1984. Class I Cultural Resources Historical Overview of the Known Recoverable Coal Resource Area. (BLM study). Wyoming. c
243	left	12	2	N/A	Add: CU Plan -- Construction and Use Plan

EIS TEXT CHANGES

Page	Column	Para.	Line	Is:	Should Be:
243	left	13	2	N/A	Add: DSL--Department of State Lands (Montana)
		15	2	N/A	Add: FAA--Federal Aviation Administration
	right	12	1	N/A	Add: OFI--Office of the Federal Inspector
245	right	9	4	N/A	Add:

CATEGORY II (PLANT AND ANIMAL CLASSIFICATIONS)--Category II, as used in this EIS, indicates plant or animal species (taxa) that should be listed as endangered or threatened, but require further biological study and field analysis before a determination can be made.

250	right	3	5	N/A	Add:

STREAM CLASSIFICATION--The following classifications are used in appraising the relative value of stream fishery resources. These classifications and values were derived jointly by various state wildlife management agencies and the Fish and Wildlife Service.

Value Class	Class Definition
I	Highest-valued fishery resource
II	High-priority fishery resource
III	Substantial fishery resource
IV	Limited fishery resource

N/A = not applicable (generally indicates text addition);
p = first partial paragraph; Para. = paragraph

ERRATA SUMMARY

EIS TABLE CHANGES

Table 1, pages 11, 12, and 13

Agency	Nature of Action	Authority	Project Feature (applicable project
DEPARTMENT OF THE INTERIOR			
Add:			
Bureau of Land Management	Grant rights-of-way and issue temporary use permits	Title V of Federal Land Policy and Management Act of 1976	Gas treatment plant
WYOMING			
Is:			
Wyoming Public Service Commission	Issue Certificate of Public Convenience and Necessity	Wyoming Statutes 1977 and Wyoming Administration Procedure Act, W.S. 37-1-101, 37-1-102, 37-1-116, 37-2-117, 37-2-119, 37-2-120, 37-2-122, 37-2-205 through 207, 37-2-210 through 212, 37-3-114, 37-6-101 through 107, Title 49, CFR Parts 191, 192, and 195 of the Department of Transportation regulations for plants and pipelines.	
Should Be:			
Deleted.			
Add:			
Department of Environmental Quality			
Solid Waste Management	Issue waste disposal permit		Pipelines and plant
MONTANA			
Is:			
Department of State Lands	Grant right-of-way easement		Pipeline
	Issue Notification to clear right-of-way on Private Lands		
	Issue Permit to cross State Water Bottoms		
	Grant permit to excavate 10,000 cubic or more of select fill for pipe bedding material	Open Cut Mining Act	Pipeline
Should Be:			
Department of State Lands	Grant right-of-way easement		Pipeline
	Issue Permit to cross State Water Bottoms		Pipeline
	Grant permit to excavate gravel, borrow, etc., for pipe bedding material	Open Cut Mining Act	Pipeline
Add:			
County Weed Control Boards	Approves revegetation plan for disturbed land	Montana County Noxious Weed Management Act	Pipelines

EIS TABLE CHANGES

Table 3, pages 24 and 25

Milepost	Block Valve Exxon	Block Valve Amoco	Booster Station Exxon	Booster Station Amoco	Feature
Is:					
49.0 R 643.5		X			
Should Be:					
49.0 R 643.8		X		X	origin point

Table 4, page 30

Site Name	State	Remarks
Is:		
1. Pacific Creek	WY	Adjacent to existing site-- 7 miles NE of Larson
20. Keene	NS	Adjacent to existing site-- 5 miles NW of Keene
Should Be:		
1. Pacific Creek	WY	Adjacent to existing site-- 7 miles NE of Farson
20. Keene	ND	Adjacent to existing site-- 5 miles NW of Keene

ERRATA SUMMARY

Table 5, page 38

Proposed Action	Acres Disturbed	Acres Reclaimed
Is:		
Pipelines		
666.5 miles @ 12 acres per mile	7,967.0[b]	7,961.0
TOTAL	9,485.0	9,262.0
Should Be:		
Pipelines		
666.8 miles @ 12 acres per mile	7,970.6	7,964.6
TOTAL	9,488.6	9,265.6

Table 7, page 40

	1986								
Component	2nd Quarter			3rd Quarter			4th Quarter		
	Exxon	Amoco	Shell	Exxon	Amoco	Shell	Exxon	Amoco	Shell
Is:									
Main Pipeline									
Spread 1 (includes Bairoil Spur)	174	174	199	199	97	97			
Should Be:									
Main Pipeline									
Spread 1 (includes Bairoil Spur)	174	174		199	199	97		97	

EIS TABLE CHANGES

Table 8, page 41

Spreads	Location by Milepost	Length in Miles
Is:		
Spread 6	MP 567-643.5	76.5
TOTAL (Spreads 1-6):		663.5
Should Be:		
Spread 6	MP 567-643.8	76.8
TOTAL (Spreads 1-6):		663.8

Table 9, page 42

Pipeline Welding Storage Yard Location	Loads (one way)	Total Tonnage of Material Hauled/Destination
Is:		
Baker, MT[3]	Shell 2/day	5,000 tons for Spread 1[4]

4 Shell would haul for about 120 days.

Should Be:		
Baker, MT[3]	Shell 10/day[4]	5,000 tons for Spread 1

4 Shell would haul for about 25 days.

ERRATA SUMMARY

Table 10, page 43

Main Roads Used for Hauling	Plant
Is:	
Wyoming 73	
U.S. 287/Wyoming 789	
Wyoming 220	
Montana 327	
Should Be:	
Wyoming 73	X
U.S. 287/Wyoming 789	X
Wyoming 220	X
Montana 323	

Table 13, pages 56 and 57

Milepost	Feature
Is:	
643.5	Tioga Terminal
Should Be:	
643.8	Tioga Terminal

EIS TABLE CHANGES

Table 14, page 58

Alternative Components	Acres Disturbed	Acres Reclaimed
Is:		
532.5 miles @ 12 acres per mile	7,358.0[a]	7,352.7
TOTAL	8,799.0	8,583.7
Should Be:		
532.5 miles @ 12 acres per mile	7,361.6	7,356.3
TOTAL	8,802.6	8,587.3

Table 17, page 61

Spreads	Location by Milepost	Length in Miles
Is:		
Spread 6	MP 567-643.5	76.5
TOTAL (Spreads 1-6):		663.5
Should Be:		
Spread 6	MP 567-643.8	76.8
TOTAL (Spreads 1-6):		663.8

ERRATA SUMMARY

Table 18, page 62

Pipeline Welding & Storage Yard Location	Loads (one way)	Total Tonnage of Material Hauled/Destination
Is:		
Baker[3]	Shell 2/day	5,000 tons for Spread 1[4]
Should Be:		
Baker[3]	Shell 10/day[4]	5,000 tons for Spread 1

[4] Shell would haul for about 120 days.

[4] Shell would haul for about 25 days.

Table 33, page 89

Vegetation Types	Main Pipeline and Facilities Disturbed	Total Disturbed
Is:		
Grassland	2,588	2,882
TOTAL	8,378*	9,485
Should Be:		
Grassland	2,591.6	2,885.6
TOTAL	8,381.6*	9,488.6

EIS TABLE CHANGES

Table 37, page 96

Stream/Lake
Is:
Little Beaver Creek near Marmarth, WY
Should Be:
Little Beaver Creek near Marmarth, ND

ERRATA SUMMARY

Table 38, pages 101-102

Habitat Type	Milepost
Is:	
Mule Deer	
Crucial winter range	35-39.5 391-394
Pronghorn	
Crucial winter range	24-136
Elk crucial winter range and calving area	114.5-115.5
Sage Grouse	
Breeding/nesting habitat	25-29R 97-99
Raptor nesting habitat	95
Prairie dog colonies	0
Should Be:	
Mule Deer	
Crucial winter range	35-39.5 138-143 391-394
Pronghorn	
Crucial winter range	124-136
Elk crucial winter range and calving area	114.5-116.5
Sage Grouse	
Breeding/nesting habitat	25-29R 69-71 87-91 97-99
Raptor nesting habitat	95-6S
Prairie dog colonies*	0

*The first 153 miles of pipeline would cross the 501 acres of prairie dog colonies. Further surveys along the remainder of the route may locate more.

EIS TABLE CHANGES

Table 39, pages 107 and 108

Is:

COMMENTS *

Should Be:

COMMENTS

ERRATA SUMMARY

Table 40, page 110

Milepost Crossing	Site Name	Eligibility Status...
Is:		
23.1	Rock Springs-Lander Stage Road	Ineligible
50.6	Point of Rocks-South Pass City Road	Undetermined
131.3	Oregon Trail	Undetermined
131.5	Oregon Trail	Undetermined
133	Oregon Trail	Undetermined
Should Be:		
47.5-48.0	Rock Springs-Lander Stage Road	Ineligible
48.1	Point of Rocks-South Pass City Road	Eligible
131.3	Oregon Trail/ Mormon Pioneer Trail	Undetermined
131.5	Oregon Trail/ Mormon Pioneer Trail	Undetermined
133.0	Oregon Trail/ Mormon Pioneer Trail	Undetermined

Sources: Commonwealth Associates 1982 and 1983: Powers Elevation 1984: BLM archaeologists 1985: Wyoming State Historical Preservation Office 1985.

[a] Overland Trail segment is within 1/8 mile of MP 49, but will not be crossed.

Sources: Commonwealth Associates 1982 and 1983; Powers Elevation 1984; BLM archaeologists 1985; Wyoming State Historical Preservation Office 1985; Rosenberg 1984.

[a] Overland Trail segment is within 1/8 mile of MP 49R, but will not be crossed.

EIS TABLE CHANGES

Table 41, page 112

Pollutant	Averaging Time	Wyoming Primary	Wyoming Secondary
Is:			
VOC (Non-Methane)[8]	3-hour[2]	160	-

8 Wyoming ambient standard. Federal hydrocarbon standard was repealed by EPA on January 5, 1983.

Should Be:

Deleted

Table 42, page 113

Pollutant	Wyoming Class III
Is:	
Total Suspended Particulates (TSP)	37 75
Sulfur Dioxide (SO_2)	40 182 700
Should Be:	
Total Suspended Particulates (TSP)	* *
Sulfur Dioxide SO_2	* * *

* Recent information from the Air Quality Division, State of Wyoming Department of Environmental Quality, indicates that there are no Class III areas in Wyoming and no Class III prevention of significant deterioration increments.

ERRATA SUMMARY

Table 48, page 122

Project Component by Milepost	Description
Is:	
MP 509-511	Crosses Little Missouri River and "seen area" viewed from the river, designated as a State Scenic River by the State of North Dakota which must remain in a natural state. Scenic quality is of Class "A" because of natural landscape diversity of landform, water, and vegetation, and the free-flowing qualities of the Little Missouri River. Visual sensitivity is high because of use by canoeists and float boaters and the designation as a State Scenic river. A pipeline and road are present.
Should Be:	
MP 509-511	Crosses Little Missouri River and "seen area" viewed from the river, designated by the State of North Dakota as a State Scenic River that must remain in a natural state. This segment of the Little Missouri River is also included in the Nationwide Rivers Inventory (NRS) because of its outstanding scenic, recreational, geological, biological, and cultural values. Scenic quality is of Class "A" because of natural landscape diversity of landform, water, and vegetation and the free-flowing qualities of the Little Missouri River. Visual sensitivity is high because of use by canoeists and float boaters and the designation as a State Scenic river. A pipeline and road are present.

All references to footnote c should be to footnote b.

EIS TABLE CHANGES

Table 51, page 132

Vegetation Types	Main Pipeline and Facilities Disturbed	Total Disturbed
IS:		
Grassland	2,588	2,882
TOTAL:	7,752*	8,799
Should Be:		
Grassland	2,591.6	2,885.6
TOTAL:	7,755.6*	8,802.6

ERRATA SUMMARY

Table 53, page 135

Habitat Type	Milepost
Is:	
Pronghorn	
Crucial winter range	26-37
	124-136
Sage grouse	
Breeding/nesting habitat	97-99
Raptor nesting habitat	95
	165
Should Be:	
Pronghorn	
Crucial winter range	26-37
	13S-20S*
	124-136
Sage grouse	
Breeding/nesting habitat	87.5-87.9
	97-99
Raptor nesting habitat	95
	6.5S*
	165

* Bairoil Spur

EIS TABLE CHANGES

able 36, page 95

Stream	Milepost Crossing: Proposed Action	Milepost Crossing: Highway 85 Alternative	Existing Pipeline Crossings	State	Water Quality Classification	Fishery Classification	Game Fish Present at Crossing
Is:							
Crooks Creek*	3.2S	3.2S	no	WY	II	III	Brook Trout
Ranch Creek	357.8	357.8	yes	MT	O-3		None
Little Beaver Creek	433.4	433.4	no	MT	O-3		None
Sandstone Creek	464.5	464.5	no	MT	O-3		None
Little Beaver Creek	7.2D	7.2D		MT	O-3		None
Cabin Creek	45.5D	45.5D	yes	MT	O-3		None
Beaver Creek	482.8	482.8	no	MT	O-3		None
Cherry Creek	N/A	602.9	yes	ND		III	Brook Trout

*The Green River and Crooks Creek would be crossed twice at these locations--once each by Amoco and Exxon. The Single Bairoil Pipeline Alternative would be the same as the Proposed Action, except it would cross the Green River only once at MP 2.6; it would not cross at MP 38.1R. The alternative would not cross Crooks Creek twice at MP 109.5 and 3.2S.

WY = Wyoming; MT = Montana; ND = North Dakota

Should Be							
Crooks Creek**	3.2S	3.2S	no	WY	II	III	Brook Trout
East Cottonwood Creek	122.0	122.0	yes	WY	unknown	unknown	Brook Trout
Willow Creek	130.0	130.0	yes	WY	unknown	unknown	Brook Trout
Ranch Creek	357.8	357.8	yes	MT	C-3		None
Little Beaver Creek	433.4	433.4	no	MT	C-3		None
Sandstone Creek	464.5	464.5	no	MT	C-3		None
Little Beaver Creek	7.2D	7.2D		MT	C-3		None
Cabin Creek	45.5D	45.5D	yes	MT	C-3		None
Beaver Creek	482.8	482.8	no	MT	C-3		None
Cherry Creek	N/A	602.9	yes	ND		III	None

*The Green River and Crooks Creek would be crossed twice at these locations--once each by Amoco and Exxon. The Single Bairoil Pipeline Alternative would be the same as the Proposed Action, except it would cross the Green River only once at MP 2.6; it would not cross at MP 38.1R. The alternative would not cross Crooks Creek twice at MP 109.5 and 3.2S.

**Crooks Creek would be crossed by three pipelines at this milepost--one Exxon pipeline and two Amoco pipelines.

WY = Wyoming; MT = Montana; ND = North Dakota

ERRATA SUMMARY

Table A-1, page 201

Components	Acres Disturbed	Private
Is:		
666.5 miles @ 12 acres per mile	7,998.0	5,054.4
TOTAL:	9,516.0	6,053.6
Should Be:		
666.5 miles @ 12 acres per mile	8,001.6	5,058.0
TOTAL:	9,519.6	6,057.2

Table A-2, page 204

Milepost	Miles	Ownership/ Management
Is:		
Bairoil Spur Pipeline		
2.9 - 3.5	0.6	Wyoming
3.5 - 13.7	10.2	BLM
13.7 - 16.8	3.1	Private
16.8 - 17.8	1.0	BLM
Should Be:		
Bairoil Spur Pipeline		
2.9 - 3.6	0.7	Wyoming
3.6 - 11.4	7.8	BLM
11.4 - 11.9	0.5	Wyoming
11.9 - 17.8	5.9	BLM

STATE OF MONTANA SUPPLEMENT TEXT CHANGES

STATE OF MONTANA SUPPLEMENT TEXT CHANGES

Page	Para.	Line	Is:	Should Be:
1 (and subsequent references)	2	3	Shell Pipeline Company	Shell Pipe Line Corporation
		5-6	...might build to take CO_2 from the Exxon pipeline near Baker...	...might build to distribute CO_2 near Baker...
5	3	21	...for natural gas pipelines...	...for natural gas or liquid pipelines...
8	1	5	...Shell's Cedar Creek Field...	...the Cedar Creek anticline fields...
9 (and subsequent references)	6	2	...Exxon/Shell Pipeline project...	...Exxon and Shell pipeline projects...
12	2	1-2	The area....is believed rich in prehistorical and historical resources.	The area....may contain prehistorical and historical resources.
14	4	1-2	Construction of the proposed pipeline is not likely to affect significant paleontological resources.	Exxon has sponsored a paleontological inventory to locate fossil localities and evaluate their significance.
		5-8	A paleontologist who examined the formations that would be crossed by the Exxon pipeline found no sites containing fossils of large dinosaurs, reptiles, or mammals (Hager 1985).	Deleted.
15	1	8-10	...and other conditions of gas in the pipeline, but there was no statement as to whether there would be a backup system in case this system fails.	...and other conditions of gas in the pipeline. Shell proposes to install an on-line backup computer, in case the primary computer system fails.

ERRATA SUMMARY

Page	Para.	Line	Is:	Should Be:
21	5	all	A paleontologist should be present during construction in the Hell Creek formation, especially where known fossils exist, such as in the Baker vicinity. This monitoring should be done for construction of both the pipeline and access roads.	As a possible mitigating measure, a paleontologist could be present during construction in the Hell Creek or other formations where the potential to find significant fossils is high. This monitoring should be done for construction of both the pipeline and access roads in those areas identified as containing known fossils of importance based upon BLM and State concurrence with recommendations made by Exxon after completion of the inventory report.
22	1	5-7	This measure should specify procedures for evaluating importance of fossil finds, collecting and recording information from the fossils, and housing or other protection of important fossils.	As part of the permitting process, Exxon would be required to demonstrate its capability for evaluating importance of fossil finds, collecting, cataloguing, recording, and housing any fossil material disturbed through construction.
	2	4-9	The BLM draft EIS did not mention whether a backup system was to be installed to monitor pressure, temperature, flow rate, or total flow, or whether there would be any monitoring at all of water vapor content, but given the concern expressed by the safety experts, a backup system is highly recommended. Water vapor should be monitored.	Shell proposes to install an on-line computer in case the computer system fails. Shell also will continually monitor water vapor at the CO_2 receipt sites.

STATE OF MONTANA SUPPLEMENT TEXT CHANGES

Page	Para.	Line	Is:	Should Be:
22 (and subsequent references)	3	heading	Crack Arrestors	Fracture Arrestors
		7-8	Crack arrestors should be no more than 1,000 feet apart...	Pipeline design should investigate the potential for propagation of longitudinal fractures. If fracture arrestors are required for the pipe used in construction, they should be no more than 1,000 feet apart...
31	7	1-2	Shell estimates its total cost...	As an example, Shell estimates its total cost...
32	2	3-4	...to deliver CO_2 from the Exxon pipeline to the Cedar Creek anticline fields.	...to deliver CO_2 to the Cedar Creek anticline fields.
		8-9	...limit initial investment of CO_2 EOR to large oil fields close to the Exxon pipeline.	...limit initial investment of CO_2 EOR to large oil fields close to the Baker area.
33	1	1-3	Shell predicts that most highly skilled workers would be from outside of the Baker/ Glendive area, but that half...	Shell predicts that most highly skilled workers would be from outside of the Baker/Glendive area because of the unavailability of sufficient numbers of skilled workers to meet project needs, but that approximately half....
	5	5	...gain lengevity.	...gain longevity.
45	6 (Item 4)	3-4	If the line is cut off for a considerable period of time, then...	If the line is cut off long enough to deprive livestock of water...
46	3	2	N/A	Add: (Seed mixtures are shown on page 60.)

ERRATA SUMMARY

Page	Para.	Line	Is:	Should Be:
47	1	1-2	Provide buffalo berry, chokeberry, Russian olive, and wild plum seedlings (3 of each)...	Provide buffalo berry, chokeberry, Russian olive, and wild plum seedlings (10 of each)...
48	7 (Item 4)	2	Intermittent drainage.... shall be restored to the original configuration prior to construction.	Intermittent drainage.... shall be restored to the original configuration after construction (see BLM Required Reclamation and Erosion Control Procedures under "Backfilling and Grading," Appendix 4 of the draft EIS or Appendix 1 of the final).
49	2 (Item 10)	1-2	Prevent any molestaion of antelope....during spring/fall construction.	Prevent any molestation of antelope....during spring/fall construction (see BLM Wildlife Measures, Section 5(d), "Required General Resource Measures).
	4 (Item 3)	1	3. Existing right-of-way easements...	2. Existing right-of-way easements...
		12	4474 Exxon Pipeline Company	4474 Shell Pipe Line Corporation
		14	4494 Exxon Pipeline Company	4494 Shell Pipe Line Corporation
		16	6620 Exxon Pipeline Company	6620 Shell Pipe Line Corporation
51	6 (Item 6)	2	N/A	Add: ...(see BLM Required Reclamation and Erosion Control Procedures, "Backfilling and Grading").
52	1 (Item 3)	1	In the boggy site (NW1/2NW1/2)...	In the boggy site (NW1/4 NW1/4)...

STATE OF MONTANA SUPPLEMENT TEXT CHANGES

Page	Para.	Line	Is:	Should Be:
54	3 (Item 4)	1-3	Three (3) plants each.... shall be planted.... between Sections 33 and 34	Ten (10) plants each....shall be planted between....Sections 33 and 34. (see BLM Required Reclamation and Erosion Control Procedures, "Backfilling and Grading").
55	1 (Item 3)	1-2	Plant three (3).... spaced accordingly.	Plant ten (10)....spaced accordingly. These seedlings should be planted within the right-of-way corridor, but still allowing for the 30-foot space requirement by Exxon directly above the pipeline.
56	2 (Item 7)	4	N/A	Add: (See BLM Wildlife Measures, Sections 5(h) and (i).)
57	(Heading)		SHELL CO_2 TAP TO EXXON CO_2 PIPELINE	SHELL DISTRIBUTION PIPELINE
	5 (Item 5)	2-3	Exxon Pipeline Company shall be responsible...	Shell Pipe Line Corporation shall be responsible...
58	2 (Item 5) (and subsequent references)	2	Shell Oil Company's...	Shell's...
	3 (Item 6)	2-3	Exxon Pipeline Company shall be responsible...	Shell Pipe Line Corporation shall be responsible...
59	1 (Item 4)	2-3	...SW1/4SE1/4; a cofferdam shall be constructed if necessary to prevent extreme sedimentation downstream. Channel and banks...	...SW1/4 SE1/4 (see BLM Required Reclamation and Erosion Control Procedures, "Backfilling and Grading"). Channel and banks...

ERRATA SUMMARY

Page	Para.	Line	Is:	Should Be:
61	(References)			Add:

Clark, Jerry. 1985. Archaeologist, Miles City Office, Bureau of Land Management. Telephone conversations (August 28, 29, September 6) with Kevin Hart, Environmental Specialist, Energy Division, Montana DNRC, Helena, MT.

Hanson, Dale. 1985. Range management specialist, Miles City Office, Bureau of Land Management. Telephone conversations (August 28, 29, September 6) with Kevin Hart, Environmental Specialist, Energy Division, Montana DNRC, Helena, MT.

Stanfill, Alan. 1985. Archaeologist, Montana Historic Preservation Office. Telephone conversations (August 19, 26, 28, and September 6) with Kevin Hart, Environmental Specialist, Energy Division, Montana DNRC, Helena, MT.

Table 1, page 3

Activity Requiring Action	Form of Action	Location	Timing of Action: Planning	Timing of Action: Construction	Timing of Action: Post Construction	Remarks
DEPARTMENT OF HIGHWAYS						
IS:						
Crossing highway right-of-way	Permit	Highways	Issue Permit	Surveillance		Permits construction of a ditch across a state or federal road.
SHOULD BE:						
Crossing highway right-of-way	Permit	Highways	Issue Permit	Surveillance		Permits construction of a roadway crossing: bored or pushed hole, or open trench.
ADD:						
Crossing highway right-of-way with electrical lines	Permit	Highways	Issue Permit	Surveillance		Permits construction of overhead electrical lines.

SECTION 3

CONSULTATION AND COORDINATION

The Bureau of Land Management (BLM) requested and received consultation from many organizations and individuals, public and private, in developing the draft and final environmental impact statements (EISs) on the proposed Bairoil/Dakota Carbon Dioxide Projects.

SCOPING PROCESS

The first step in preparing an EIS is called "scoping" and is governed by regulations for implementing the National Environmental Policy Act (40 CFR, Part 1501.7). The scope of an EIS is the range of actions, alternatives, and impacts to be included in the draft EIS. Information obtained during the scoping process was one of the sources used to determine significant issues to be addressed in detail in the EIS.

The scoping process was also used to inform affected federal, state, and local agencies and other interested persons about the proposal and to identify existing environmental reports and information related to the proposal.

The basic goal of scoping is to make EISs more concise and meaningful to those in the Federal Government who must make decisions on the proposal, those in state and local government, and those who may be affected by approval or disapproval of the proposal or alternatives.

Methods of Scoping

The scoping process for the Bairoil/Dakota Carbon Dioxide Projects consisted of agency meetings, mailouts to solicit written comments from the public, and informative conversations with interested parties within the affected area.

Three public meetings were also held during the scoping process:

February 26, 1985, 7:00 p.m.
Baker High School
1015 South 3rd West
Baker, Montana

February 27, 1985, 7:00 p.m.
Broadus High School
500 North Trautman
Broadus, Montana

March 7, 1985, 7:00 p.m.
Gate City Community Room
204 Sims Street
Dickinson, North Dakota

With the assistance of federal and state agencies, local entities, and private individuals, the significant issues and concerns were identified for analysis in the EIS. Insignificant issues were also identified so that they could be eliminated from the scope of the EIS. Project information and information on the scoping process were published in the Federal Register on February 13, 1985.

Scoping packets were mailed to interested persons selected in part from the mailing lists of the affected BLM districts and the State of Montana. Packets were also sent to anyone requesting them.

Results of Scoping

The results of the scoping process, along with comments from various federal and state agencies, identified the most significant issues associated with

the project. The extent to which each resource was analyzed was partially determined by the concerns raised during scoping. The most significant issues were determined to be within the following topics (listed in priority order):

- Socioeconomics
- Soils and Reclamation
- Water Resources
- Wildlife

A report on the scoping results can be obtained from the Bureau of Land Management, Wyoming State Office, P.O. Box 1828, Cheyenne, Wyoming 82003.

AGENCY AND PUBLIC INVOLVEMENT

BLM was assigned lead responsibility for preparing the EIS. BLM personnel with a wide variety of disciplines were assigned to a team to ensure an interdisciplinary approach in preparing the EIS. Their areas of expertise included socioeconomics, wildlife biology, soils and vegetation, cultural resources, agriculture, air and water resources, visual resources, transportation, and wilderness resources. Information about EIS team members is included in the List of Preparers (draft and final EIS).

In addition, BLM sought help from the following cooperating agencies:

U.S. Department of Army
Corps of Engineers

U.S. Department of Agriculture
Forest Service

State of Montana
Department of Natural Resources and Conservation,
Facility Siting Bureau

Between January and September 1985, various unpublished drafts and portions of drafts were distributed for review to federal and State of Montana agencies. Each version was revised based on written review comments and subsequently published as the official draft EIS. The draft EIS was released for a 60-day public review on September 13, 1985.

Table 2 lists the federal and state agencies, local governments, legislatures, and individuals that were asked to formally review the draft EIS.

PUBLIC REVIEW

The Bairoil/Dakota Carbon Dioxide Projects Draft EIS (INT DEIS 85-38) was filed with the Environmental Protection Agency on September 13, 1985 and announced in the Federal Register on September 11, 1985 (Vol. 50, No. 176, pages 37060 and 37061). In addition, news releases were sent to the media in areas that would be affected by the Proposed Action or alternatives. These releases announced the availability of the draft, described the Proposed Action and alternatives, and requested public comment on the adequacy and accuracy of the draft EIS. In addition, the State of Montana Supplement was released for public review on October 10, with a comment period of October 10 through November 12, 1985.

PUBLIC REVIEW

TABLE 2

Agencies, Organizations, and Individuals
Requested to Formally Review the Draft EIS

Federal Government Agencies

Advisory Council on Historic Preservation

* Department of Agriculture
  - Forest Service[1]
  - Soil Conservation Service

* Department of the Army
  - Corps of Engineers[1]

Department of Energy

Department of the Interior
* Bureau of Indian Affairs
* Bureau of Reclamation
* National Park Service
* Bureau of Mines
* Fish and Wildlife Service
- Geological Survey

* Environmental Protection Agency

Federal Energy Regulatory Commission

Federal Highway Administration

Interstate Commerce Commission

State Government Agencies

Montana
- State Clearinghouse
- Department of Fish, Wildlife, and Parks
- Department of Natural Resources and Conservation[1]
- Department of Highways
- Department of State Lands
- State Historic Preservation Officer
- Department of Health and Environmental Sciences

North Dakota
- State Clearinghouse
- Department of Game and Fish
- Public Service Commission
* State Historic Preservation Officer

TABLE 2 (continued)

Agencies, Organizations, and Individuals
Requested to Formally Review the Draft EIS

Wyoming
* State Clearinghouse
Department of Economic Policy and Planning
Recreation Commission
Wyoming State Engineers Office
Wyoming Game and Fish Department
Wyoming State Historic Preservation Office

Local Government Agencies and Jurisdiction

Montana
Carter County
* Dawson County
Powder River County
Northern Cheyenne Tribe
Assinboine/Sioux Tribe
Custer County
Fallon County
Richland County
Crow Tribe

North Dakota
Billings County
Golden Valley County
Montrail County
Williams County
Dunn County
McKenzie County
Stark County

Turtle Mountain Band of the Chippewas
Standing Rock Sioux Tribal Council
Mandan, Hidatsa, and Arikara Tribes
Devil's Lake Sioux Tribe

South Dakota
Butte County
Pennington County
Lawrence County

Ogalala Sioux Tribe

Wyoming
Campbell County
Converse County
Johnson County
Sheridan County
Carbon County
Fremont County
* Natrona County
Sweetwater Coutny

Arapaho/Shoshone Tribes

TABLE 2 (concluded)

Agencies, Organizations, and Individuals
Requested to Formally Review the Draft EIS

Environmental Groups
* Dakota Resources Council
Green River Economic Development Association
National Resources Defense Council
* Northern Plains Resource Council
* Powder River Basin Resource Council
* Sierra Club
Wild Horse Organized Assistance
Wyoming Outdoor Council
Wyoming Wildlife Federation

Industries and Individuals[2]

State Legislators[2]
Montana
North Dakota
Wyoming

U.S. Senators and Representatives[2]
Montana
North Dakota
Wyoming

* Reviewed the draft EIS and provided comments to BLM
1 Cooperating agencies
2 Detailed list available upon request from the BLM Wyoming State Office, P.O. Box 1828, Cheyenne, Wyoming 82003

CONSULTATION AND COORDINATION

About 800 copies of the draft EIS were distributed to various individuals, organizations, and government agencies. BLM conducted three formal public hearings (one, jointly with the State of Montana in Baker) to gather public comments and concerns. (Table 3 shows the locations and other details of these hearings.) The public hearing transcripts have not been reprinted because they are part of the public record. However, copies of these hearings may be reviewed at the following BLM offices:

Wyoming State Office
2515 Warren Avenue
Cheyenne, WY 82003

Casper District Office
951 Rancho Road
Casper, WY 82601

Rawlins District Office
1330 Third Street
Rawlins, WY 82301

Miles City District Office
West of Miles City, MT
59301

Dickinson District Office
Dickinson, ND 58602

In addition to the public hearing comments, BLM received 26 letters during the comment period, addressing the draft EIS. The State of Montana received three official and seven unofficial letters addressing its Supplement. All EIS letters and public hearing testimony were assigned a reference number and reviewed. See Table 4 for numbers and identification of commenters. (Excerpts were taken from letters addressing the State of Montana Supplement.)

COMMENTS AND RESPONSES

Individual comments within a letter or testimony that presented new data or issues or suggested changes, sources, or methodologies were identified and responded to. The testimony comments have been paraphrased, while all comment letters have been reprinted verbatim, except for their respective attachments. The responses that immediately follow each comment letter or testimony are identified by the reference numbers appearing for the testimony or letter (Table 4).

Responses either explain that the EIS or State of Montana Supplement text has been changed as recommended by the commenter or explain why a change was not appropriate. Written and oral comments on the draft EIS appear first, followed by letters requiring no response. Letters requiring no response basically offer opinions. These were included and used in the decision-making process. (Letters, except Exxon's, received by the State of Montana, Department of Natural Resources and Conservation have not been included but have been excerpted for the convenience of the reader.)

TABLE 3

Draft EIS Public Hearings

Hearing Date	Panel	Attendance	Speakers
Casper, Wyoming 10/22/85	J. VanWyhe, BLM, Presiding G. Nebeker, BLM B. Shark, BLM	18	5
Baker, Montana 10/23/85	J. VanWyhe, BLM, Presiding R. McWhorter, BLM B. Shark, BLM W. Wetzel, DNRC	19	1
Dickinson, ND 10/24/85	J. VanWyhe, BLM, Presiding J. Crockford, BLM B. Shark, BLM	11	4

WY = Wyoming; MT = Montana; ND = North Dakota; BLM = Bureau of Land Management; DNRC = State of Montana, Department of Natural Resources and Conservation.

CONSULTATION AND COORDINATION

TABLE 4
Public Hearing and Comment Letter Reference Numbers

	Reference	Source	Representing	Location
	Public Hearing			
*	PH 1	Chris Magoc	Powder River Basin Resource Council	Casper, WY
	PH 2 - 14	Ed Swartz	Ranchers	Gillette, WY
	PH 15	Mike Ray	Self	Casper, WY
	PH 16	Mickie Decker	Plumbers & Pipefitters Local 795	Bismarck, ND
	PH 17	Rose Sickler	Dakota Resource Council	Dickinson, ND
	EIS Comment Letter			
	1	Roland W. Collins	Western Nuclear, Inc.	Lakewood, CO
**	2	Acting Superintendent	Bureau of Indian Affairs	Ft. Washakie,WY
	3	Board of Commissioners	County of Dawson	Glendive, MT
**	4	Mark Junge	Wyoming State Archives, Museums & Historical Department	Cheyenne, WY
	5	C. Dill	State Historical Society of North Dakota	Bismarck, ND
	6	Charles Harrison	U.S. Department of Housing and Urban Development	Denver, CO
**	7	William Cochran	Bureau of Mines	Denver, CO
**	8	Eley P. Denson	Bureau of Reclamation	Billings, MT
	9	E.B. Johnson	Frontier Pipeline Co.	Denver, CO
**	10	L.W. Collins, Jr.	Bureau of Indian Affairs	Aberdeen, SD

TABLE 4 (continued)
Public Hearing and Comment Letter Reference Numbers

Reference	Source	Representing	Location
11	Chris J. Magoc	Powder River Basin Resource Council	Sheridan, WY
12	W.J. Jackson	Shell Pipeline Corp.	Houston, TX
13	Tom Wolf	The Nature Conservancy	Ft. Collins, CO
14	David Cottingham	U.S. Department of Commerce	Washington,D.C.
15	Max L. Torbert	Natrona County Planning Commission	Mills, WY
16	Aaron L. Clark	Amoco Production Company	Denver, CO
17	T.J. Tibbetts	Exxon Company, USA	Midland, TX
18	Richard A. Strait	National Park Service	Denver, CO
19	Mike Massie	Wyoming Chapter Sierra Club	South Pass City WY
20	Dale Vodehnal	U.S. Environmental Protection Agency Region VIII	Denver, CO
21	John L. Lamb	Audubon Society of Fargo-Moorhead	Fargo, ND
** 22	Bradley G. Penn	Marathon Oil Company	Casper, WY
23	Assistant Regional Director	Fish and Wildlife Service	Lakewood, CO
24	Ed Herschler, Governor	State of Wyoming	Cheyenne, WY
	Richard C. Moore	Office of Industrial Siting Administration	
	William P. King	State Highway Department	
	Alvin F. Bastron	Wyoming Recreation Commission	
	John W. Jackson	Water Development Commission	

TABLE 4 (concluded)
Public Hearing and Comment Letter Reference Numbers

Reference	Source	Representing	Location
	Louis E. Allen	State Engineers Office	
	Michael Stoll	Department of Environmental Quality	
	Tim Link	Department of Environmental Quality	
	John F. Jacquot	Public Service Commission	
	Bruce Marker	Game and Fish Department	
	Douglas Crowe	Game and Fish Department	
	Paul Cleary	Office of the Governer	
** 25	David A. Anderson	Forest Service	Lakewood, CO
26	Gerard E. Mich	Department of the Army	Omaha, NE
** 27	Aaron L. Clark	Amoco Production Company	Denver, CO

*Comments were the same as submitted in comment letter 11.

**Letters requiring no response.

EIS Public Hearing Comments and Responses

PUBLIC HEARING COMMENT AND RESPONSES

Speaker: Chris Magoc--representing Powder River Basin Resources Council (Casper Hearing)

PH 1 Comments at the public hearing were the same as written from the Powder River Basin Resource Council. Because the letter was reprinted in this final EIS, we have responded to it, rather than the public hearing comments. Please see responses to comment letter 11.

Speaker: Ed Swartz--representing ranchers in Gillette, Wyoming (Casper Hearing)

PH 2 **Comment:** The 100-foot right-of-way is too big. Most ranchers have seen pipelines built on 50- to 60-foot rights-of-way, and most of them feel, where they're following existing lines, much of the ground work has been done, and they can get by with a smaller one than 100-feet.

Response: Permanent right-of-way widths on private land are subject to negotiations between the company and the landowner. The average widths used to analyze impacts are those that would be disturbed during construction only.

PH 3 **Comment:** Is Exxon going to go clear to bare ground for construction on the areas of the pipeline where they are paralleling the right-of-way and maybe the ground is fairly level? Are they going to cut all the grass roots out? That makes it a lot harder to revegetate than if they can build their line without going to bare ground everywhere.

Response: In most cases, the company would clear to bare ground. However, in areas where the ground is fairly level, the company will be required to crush the brush and work on top of the topsoil and roots--on the working side. On the soil-storage side, the topsoil will be scraped and saved so that piled subsoil will not mix with surface topsoil. In hilly areas, the right-of-way will be scraped and leveled as described for the Proposed Action.

PH 4 **Comment:** Most of the ranchers feel that a 3-foot depth for the pipeline trench is not safe. They don't like to have something carrying that much pressure so close to the surface where they could theoretically hook it with a posthole digger or a subsoiler.

Response: The depth a pipeline should be buried on private land is subject to negotiations between the company and the landowner, as part of their easement agreement. BLM does not have the authority to stipulate measures on private land.

PH 5 **Comment**: One of my concerns is that Exxon wants a 50-foot permanent right-of-way. I have worked with a couple of other oil companies that have laid 8- and 10-inch lines. They were tickled to death to put the line back to a 10-foot permanent right-of-way. They said there was no reason to have 50 feet. Everyone knows if they have a leak we're sure not going to holler if they tear up a 10-foot right-of-way with 12 feet. We want the leaks fixed, but we do not want them to own our pasture.

Response: Please see response to public hearing comment PH 2.

PH 6 **Comment**: One of the ranchers said that he had seen several miles of pipeline trench left open for months at a time when bad weather hit. There needs to be a mitigation that there cannot be too much line left open at one time in any pasture where there are livestock. That can be a real economic hardship to lose cattle and horses in the trenches. If the company opens a mile of trench a day, it should close a mile a day and not have more open than can be closed in one day. That way, if the weather starts to turn bad, the construction crews could close up that mile before they open another mile.

Response: Provisions have been made to prevent interference with livestock trailing and to permit livestock and vehicle access across the right-of-way during construction. Please see Appendix 1 of this EIS, Required General Resource Measures, Items 2a and 2b, and Assumptions on page 90 of the draft EIS.

PH 7 **Comment**: Compaction from running heavy equipment over rangeland is a concern. Would there be some way of subsoiling, stopping that compaction where they cross one of the private ranch roads or go through the fences? Are you going to address the impact of this?

Most of the counties and the highway department make them bore under roads, which ranchers would probably not do, but is that going to leave a rancher with a ditch that would tear the front axle out of his pickup when it settles? Please address this.

Response: Comment concerns were addressed in Appendix 4 of the draft EIS, Required General Resource Measures, Item 3a and Required Reclamation and Erosion Control Procedures, second item under Land Preparation for Seeding and Cultivation. (This appendix has been reprinted as Appendix 1 of this final EIS.) Private landowners can require companies, as part of the easement agreement, to employ specific mitigation measures on their lands. (Landowners could seek legal advice if needed.)

PH 8 **Comment**: Have you addressed the impact to uranium mining in the event that the uranium market picks up?

Response: Yes, impacts to uranium mining have been addressed. Please see pages 115 and 118 of the draft EIS.

PH 9 **Comment**: How long is it going to take to shut down the pipeline if there is a break? How much carbon dioxide would be lost? A tremendous amount under the right kind of temperature inversion or cloud inversion could be life-threatening if Exxon does not have an automatic shut off or if the block valves were located in a remote area like the middle of my ranch.

Response: The time required to shut the pipeline down in case of a rupture would vary (at the longest, 1 to 2 hours) depending on location. (Please see page 52 of the draft EIS, right column, Operations and Maintenance for Monitoring Procedures.) The amount of CO_2 that would be lost would depend on the size of the rupture and the time required to shut the line down. The worst case would be a rupture on the Bairoil to Tioga segment, which could involve the release of 94 million standard cubic feet. This calculation is based on a block valve spacing of 21 miles.

As for possible impacts, please see page 54, Rupture Scenario, and page 127, Health and Safety, both in the draft EIS. Only those in the immediate vicinity of the rupture would be in major danger. From that point, CO_2 would rapidly dissipate, posing no danger to the surrounding areas.

PH 10 **Comment**: What will be the impact of all the spur lines? If there are a lot of markets for CO_2, there are going to be a lot of impacts from the spur lines. Should it be addressed in this EIS?

Response: All spur lines currently proposed for the Amoco, Exxon, and Shell projects were analyzed. Please see Chapter 2 of the draft EIS. If additional projects or spur lines are proposed in the future, additional environmental analyses would be prepared.

PH 11 **Comment**: You need to put a mitigation in the document that protects the ranchers by making the company release ranchers' rights-of-way when the pipeline or plant is terminated.

Response: Since landowners will have easement agreements with the company, each rancher should make sure this measure is included.

PH 12 **Comment**: I understand that the pipeline will run across coal--was this covered in the EIS? Who will pay for moving the line? What happens if it's fee coal? (There isn't a lot of fee coal in our country. Where there is, it could be a real financial hardship on the rancher if a coal mine was proposed and because of the pipeline right-of-way there was a corporate fight and the coal was not mined.)

Response: The pipeline and the coal companies would have to negotiate on who would pay for moving the pipeline if a conflicting situation occurred. (See pages 116 through 118 of the draft EIS.) Payment for moving the line would be handled on a case-by-case basis and involve many factors. If the pipeline was relocated because of this type of situation, it would probably not be far from the original alignment.

PH 13 **Comment**: Some of the ranchers are pretty upset about losing AUMs they have already paid for in their grazing leases because of pipeline construction on BLM land. They do not feel that this loss is insignificant, especially with a grasshopper year like we had in Gillette this last year.

Response: See pages 89 and 90, Significance Criteria and Environmental Consequences, livestock grazing section, of the draft EIS. AUM loss from project activities would be short term and range from 1 AUM per mile in the low forage areas to 2 AUMs loss in the higher forage areas. This AUM loss is well below the 1 percent significance criteria. Because of the location of the right-of-way and extent of contiguous BLM land crossed, the effect on any one ranch operation would generally be less than 1 to 3 AUMs.

PH 14 **Comment**: The cost of controlling noxious weeds on the right-of-way or spreading from the right-of-way is terribly expensive for the rancher to have to bear. It can eat up an entire pipeline payment in a couple of years. The Torodon which you have to use is $75 a gallon, which treats between 1 and 2 acres of Canada thistle. Can Exxon pay to control the noxious weeds?

Response: Private landowners can require companies, as part of the easement agreement, to carry out weed control methods as needed.

Speaker: Mike Ray--representing self (Casper Hearing)

PH 15 **Comment**: If there are a lot of fields that can use CO_2 for a stimulant in enhanced oil recovery, that will mean a lot of spur lines that could create a major impact on farmers or ranchers. If a large number of spurs were needed on a particular rancher's land, the land might be subdivided as many as six or seven times. This needs to be addressed as a potential impact of this pipeline. I am not against the use of CO_2 as a recovery medium, but everybody should be fully aware of what the potential is, as far as dividing up properties with rights-of-way.

Response: Please see response to public hearing comment PH 10.

Speaker: Mickie Decker--representing Plumbers and Pipefitters Local 795 (Dickinson Hearing)

PH 16 **Comment**: I'd like to ask what the impact of granting this permit to Exxon will be to the Great Plains project. Will the Exxon pipeline benefit more than it would harm the best interests of the people of the State of North Dakota?

Response: The Exxon project would not affect the Great Plains project. The Great Plains project was determined to be a less economical source of CO_2 than other sources. However, the Great Plains project was once considered as a possible alternative source of CO_2 (page 64, Alternative F, of the draft EIS).

Speaker: Rose Sickler--representing Dakota Resource Council (Dickinson Hearing)

PH 17 **Comment:** The draft EIS gives little or no consideration to the environmental impacts of the process of CO_2 injection. Many DRC members, who depend on ground water, have had their water adversely affected by oil production. Cross-contamination of aquifers, drill casing leaks, and other problems related to oil production should be examined to see what impact tertiary recovery would have on the environment.

Response: The impact of CO_2 injection at Amoco's Bairoil oil field was covered on page 97, left column, first paragraph, of the draft EIS. If other injections are proposed for different oil fields (for instance, in North Dakota), additional environmental assessments will be conducted as needed.

EIS Comment Letters and Responses

COMMENT LETTER 1

WESTERN NUCLEAR, INC.

EXECUTIVE OFFICE
104 UNION BLVD.
LAKEWOOD, COLORADO 80228
(303) 986-4571 • TELEX 45012

September 20, 1985

Ms. Janis L. VanWyhe
Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, CO 80228

Re: Comments on Bairoil/Dakota Carbon Dioxide

Dear Ms. VanWyhe:

This letter is to offer comments to the proposed carbon dioxide pipeline discussed in the Bairoil/Dakota Carbon Dioxide Projects DEIS.

Western Nuclear, Inc. is the operator of the Christensen Ranch uranium project located in Johnson and Campbell Counties, Wyoming, which lies within the proposed pipeline route.

Specifically, our concerns with the proposed route are between mile posts 250 and 260 as shown on Map A-4A. The route, as shown on Map A-4A, would cross a significant portion of the ore body, resulting in the loss of substantial ore reserves.

My questions concerning the route are directed toward the following areas:

1.1	Sections 1, 11, 12, and 14	T44N-R77W
	Sections 30 and 31	T45N-R76W

If more detailed maps could be provided of these areas showing the pipeline location right-of-way and road access, I can superimpose the boundaries of the ore body onto these maps to get a better idea as to any potential impacts the project might have upon our operations.

Thank you for your attention to this matter and for allowing Western Nuclear the opportunity to comment on the DEIS.

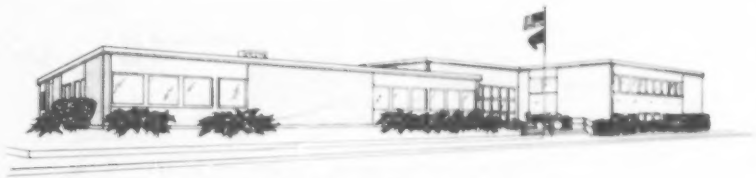
Very truly yours,

Roland W. Collins
Manager, Exploration/Environmental/
Solution Mining

RWC:bt

Response to Comment Letter 1

1.1 Exxon stated that it will provide these maps to you.



Office of:
County Commissioners
Phone 365-3562
Robert Ziegler, Chairman
Harold Skartved
W. M. Harpster

County of Dawson
207 W. Bell
Glendive, MT 59330

Office of
Clerk and Recorder
Phone 365-3068
Patricia Peterson

Office of
County Treasurer
Phone 365-3026
Betty Kegley

September 25, 1985

Janis L. VanWhye, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street
First Floor East
Denver, CO 80228

With respect,

Thank you for the opportunity to review the CO2 draft EIS.

Very little of the proposed pipeline is in Dawson County. However, that part of the County contains the source of two drainages. It seems that some noxious weeds tend to spread down natural waterways.

3.1

Other than the statement about cleaning machinery after passage through sites of noxious weeds (p. 193, 2.6.2.), we do not find mention of any effective follow-up weed control program for that vulnerable, disturbed soil.

Board of Commissioners

Robert Ziegler Harold Skartved William M. Harpster

st

Response to Comment Letter 3

3.1 Please see Appendix 1, Required General Resource Measures (BLM) 17.g., for a discussion of weed control (Appendix 4 of the draft EIS). In addition, local county weed control boards in Montana must approve a revegetation plan for all lands (public or private) where construction or maintenance activities will disturb the existing vegetation. This requirement results from a 1985 amendment to the Montana County Noxious Weed Management Act.

COMMENT LETTER 5

State Historical Society
of North Dakota (State Historical Board)
North Dakota Heritage Center, Bismarck, N.D. 58505
Telephone 701-224-2666

IN RESPONSE PLEASE REFERENCE: 85-136.

September 24, 1985

Janis L. VanWyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, 1st Floor East
Denver, CO 80228

RE: Draft Environmental Impact Statement (DEIS), Baroil/Dakota Carbon Dioxide Projects, September, 1985.

Dear Ms. VanWyhe:

We have reviewed the DEIS referenced above. The document does not really provide any assessment of cultural resources or the proposed project's potential to adversely effect or impact these resources because the surveys to identify such sites were not completed prior to production of the document.

5.1 We suggest that the Bureau include up to date and complete data based on the work completed by Exxon's contractors in the Final Environmental Impact Statement (FEIS).

5.2 We also recommend that the FEIS include the Memorandum of Agreement (MOA) which was ratified recently regarding cultural resources, as the draft MOA included in the DEIS has been modified. It should also be noted that work on cultural resource identification and evaluation has progressed quite far, and the Treatment Plans are being negotiated as of this writing.

5.3 These plans may be fully developed, ratified and implemented by the time the FEIS is produced. In our opinion it may be over reaching to suggest that the proposed project will have no significant impact on cultural resources; the impacts may be mitigatible, but that does not necessarily mean they are not significant, or that the resources effected are not significant.

Thank you for providing us the opportunity to comment on this undertaking. If you have any questions regarding these comments, please feel free to contact Mr. C. L. Dill of our staff at (701)224-2672, or in writing.

Sincerely,

James E. Sperry
State Historic Preservation Officer
(North Dakota)

CLD/je

Responses to Comment Letter 5

5.1 The cultural resource assessment in the EIS is general, designed to indicate pre-project survey information and to ensure protective compliance surveys are carried out. Although compliance surveys are being carried out, such information is too detailed and of little interest to most of the general public.

5.2 The final Memorandum of Agreement on Cultural Resources has been incorporated as Appendix 4 of this EIS.

5.3 Your point is partially correct, regarding significant impacts. However, The EIS did not state that resources, themselves were insignificant. Please see Errata Summary for clarification to page 109 of the draft EIS.

U.S. Department of Housing and Urban Development
Denver Regional Office, Region VIII
Executive Tower
1405 Curtis Street
Denver, Colorado 80202-2349

September 30, 1985

Ms. Janis L. Van Wyhe
Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, Colorado 80228

Dear Ms. Van Wyhe:

Thank you for the opportunity to review and comment on the Bair Oil/Dakota Carbon Dioxide Projects Draft Environmental Impact Statement (DEIS).

Your draft has been reviewed with specific consideration for the areas of responsibility assigned to the U.S. Department of Housing and Urban Development. This review considered the proposal's compatibility with local and regional comprehensive planning and impact on urbanized areas. Within these parameters, we are concerned that the Environmental Impact Statement (EIS) does not address the impact on Fremont, Sweetwater and Carbon Counties and the communities of Green River, Rock Springs and Bairoil regarding the provision of adequate housing, water, and sewer, health care, police and fire protection, educational, social and recreational services to support the proposed population increases due to the proposed action. Mitigation of these concerns should be addressed in the final EIS. With this exception, this EIS is adequate for our purposes. 6.1

If you have any questions regarding these comments, please contact Mr Howard Kutzer of my staff, at 844-3102.

Sincerely,

for Robert J. Matuschek
Director
Office of Community
Planning and Development

Response to Comment Letter 6

6.1 Please see pages 70 through 80 of the draft EIS for discussions of impacts to these communities. Please especially note the cumulative impact discussion on pages 79 and 80. The main impacts to the counties and communities mentioned in your comment letter would be from Exxon's La Barge Project. Since the permit conditions applied by the State of Wyoming, Office of Industrial Siting Administration (ISA), would adequately mitigate the impacts from the La Barge Project, less significant impacts would occur from the Proposed Action. Please see the Errata Summary for clarifying wording to page 80 of the draft EIS.

READER Friendly

COMMENT LETTER 9

Frontier Pipeline Company
600 So. Cherry St., Suite 900
Denver, Colorado 80222

October 28, 1985

Janis L. VanWyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street - First Floor East
Denver, Colorado 80228

RE: Exxon Company U.S.A. Bairoil/Dakota CO_2 Pipeline Project

Dear Ms. VanWyhe:

Frontier Pipeline Company has reviewed the Draft E.I.S. on the above referenced project. We have problems with the alignment along the line from Mile Post 0 to 106. This section was staked 25 feet on the south side of the Frontier's line; however, when checked in the field, the staked line was in most locations something less than the twenty-five (25') foot offset, in some cases as close as sixteen (16') feet.

Using standard construction practices, heavy equipment would be operated over Frontier's 16" pipeline. This is an unsafe practice and would not be tolerated by Frontier. Even with the twenty-five (25') foot offset backfill equipment would be working over our line, as indicated on Page 45, which would be unacceptable.

From Mile Post 106 to 139 the stake line in most cases is on the north side of Frontier pipeline. This would put all of the construction equipment directly over the pipeline as indicated on page 45. The minimum distance from Frontier's line would need to be fifty-five (55') feet to be off the pipeline.

If the Crooks Gap Option was used through this area it would eliminate some of these problems and would save tearing up Green Mountain. The route through Beef Gap and the Sweetwater Rocks Wild Scenic Area will need to be handled using special cosntruction techniques to maintain the safety of all concerned.

9.1 Frontier feels that a minimum of fifty feet should separate these lines for safe cosntruction and the ability to stabilize the vegetation along these Rights of Way. Frontier is in the process of reseeding those areas which did
9.2 not take the first time around. We feel that if it is disturbed another time, the possibility of getting anything to grow is slim.

Yours truly,

E. B. Johnson
Division Chief Engineer

EBJ/mkr

cc: J. J. Sevcik

Responses to Comment Letter 9

9.1 Exxon has informed us that your companies recently agreed on spacing the two pipelines 35 feet apart.

9.2 Exxon will be responsible for rehabilitating any part of the Frontier right-of-way disturbed during construction, even if several attempts are required.

Powder River Basin Resource Council
48 North Main Sheridan, Wyo. 82801 (307) 672-5609

October 30, 1985

Janis L. VanWyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, Colorado 80228

Dear Ms. VanWyhe,

Please consider the following comments on the Bairoil-Dakota CO2 Project in the preparation of the Final Environmental Impact Statement. These comments are those of the Powder River Basin Resource Council, based on our conversations with private landowners, and a desire to see this project implemented with minimal effects on Wyoming's greatest resources, its land and its people.

Generally speaking, we stand ready to endorse the concept of enhanced oil recovery through the injection of carbon dioxide. We believe it is better to extract all the oil you can from one well before moving on to the next.

However, as with any major energy-related project, there will be impacts and we do not believe the BLM has adequately addressed many of them in the DEIS. Most of our concerns center around the effects of this project on agriculture and private landowners; others are environmentally related. The

11.1 term "insignificant" is a word that is used with alarming frequency in the DEIS, and it makes us wonder where the BLM has drawn the "line of significance."

11.2 SPECIFIC: Right of way easements--50 and 100 foot easements on private land are unusually and unnecessarily too wide. Most companies constructing pipelines in northeastern Wyoming have required less than 70 feet to construct, 15 to maintain.

11.3 Interrelated Projects-- What does the CO2 Pipeline Project have to do with the construction of two Air Force bombing ranges in North and South Dakota? Why are they even mentioned in the DEIS? Also, the potential coal mines north and east of Gillette--if and when that coal is leased and mined, what happens to the landowners' compensation for removal and reconstruction? i.e., who pays for the excess damages? Should moving of the pipeline even be permitted in the easement contracts? This section should have either been explored much further or not discussed at all in this document.

11.4 Depth--most every rancher will agree that at a depth of only three feet, a post hole digger could easily rupture the line. The DEIS itself states that while chances of rupture are "remote," serious harm could be inflicted on anyone standing nearby (like a rancher) if it did happen.

11.5 Pipeline Quality Control--Pressure tests should be conducted at more than 125% level if possible. What if more operating pressure had to be exerted in

11.5 cont. the future? Since there are no federal standards on CO2 pipelines, shouldn't the testing be made well over and beyond normal operating pressure?

11.6 Pg. 55--"Cleanup and restoration procedures would be determined by consulting with landowners.." At what point in time is the question.

11.7 Pg. 56--Abandonment--Plugging the pipeline means leaving it in the ground where it might corrode. And if they have to come and dig up to remove, shouldn't that be in the easement contract also?

11.8 Page 92, "...will cause an insignificant crop loss." How many acres in an insignificant? This really should be defined further.

11.9 Page 93, Road Construction--If county and local budgets can't or won't pay for maintenance of road and bridge structures, who is--shouldn't Exxon be liable for it?

11.10 Also on roads: Ingress and egress on private lands should be at the direction of the landowner, not at the convenience of the contractor, as it has been so far with this project.

11.11 Page 103, Apprent contradiction: "...the project will not have any affect on crucial wildlife habitat...however big game would experience a loss of winter range habitat." Needs clarification.

11.12 Page 105, "Short term removal of prairie-dog habitat should cause no significant effects to the black footed-ferret." See figures below (actual loss of p-dog habitat is 531 acres).

11.13 Page 106, Cultural resources--"Most of the project area has not been intensively surveyed for cultural resources." When will this study happen, and how can the project go forward without an archeological study occuring?

11.14 Pg. 117, Gillette coal deposits This is more than a little disturbing. It appears as if the owners of the coal and the CO2 will be able to play an apparently arbitrary chess game with the land in Campbell County. If the pipeline will need to be relocated, who willpay for what and when? Will there be extra compensation paid to landowners?

Single Bairoil Pipeline Alternative-- This is our preferred alternative in the southern part of the project. It is based on concerns of the Wyoming Game and Fish Department and the following figures:

1. 703 vs. 796 acres of sensitive soils lost
2. 8,799 vs. 9,485 total acreage disturbed
3. one vs. two crossings of the Green River
4. 394 acres of prairie dog habitat lost vs. 531 in proposed action

5. 40 v. 186 acres of crucial mule deer winter range

6. 501 v. 828 acres of pronghorn crucial winter range

7. 0 v. 144 acres of pronghorn fawning habitat disturbed

8. 243 v. 312 acres of sage grouse breeding/nesting habitat

9. 525 v. 648 acres of raptor nesting habitat

10. 424 v. 550 acres of significant visual resources

Loss in extra jobs and population would appear to be marginal (15-30% less) compared to the the boom they will already experience. Savings everywhere else seems to make it a viable alternative. We are of the opinion that with the uncertainty of the project as it stands now, that the two companies would want to share one pipeline.

11.15 Page 162, Cost/Benefit Comparison--Says that CO2 marketability isn't known and can't really be projected. We believe that and we understand the difficult situation that Exxon is in as they determine the fate of this project. We are requesting, however that more and better information be made available to landowners and the general public by Exxon and the Bureau of Land Management. Thus far, information has been scarce. The problem for you is also a problem for us.

11.16 Spur line development--Assuming the project will proceed within the desired timeline, what will the additional effects on landowners be when the arterial lines of the project are developed? Will there be a complete and separate impact study conducted? There was absolutely no mention of this in the DEIS, and this is cause for some concern. Two hundred and thirty three fields in Campbell County alone could create a lot of subdivisions.

11.17 Pg. 183 12.a. Will Exxon notify affected landowners of the pre-work conferences? How frequently will they happen geographically?

11.18 Pg. 184 "Design and construction of temporary roads will be based on an approved (by whom?) transportation plan?

11.19 One final general comment: Although the project DEIS preparation team was made up of very capable and knowledgeable people, we would have hoped that there would have been more range management experience on the team. There seems to be only one person with one degree specifically in that field. With so many thousands of acres of prime rangeland being crossed, perhaps more emphasis should have been placed here.

Most of our other concerns focus on contract easements, compensation and rights of way; we are directing these concerns toward Exxon, as they should be.

We thank you for the many hours put into preparing the DEIS, and we

appreciate the opportunity to comment. We hope that these and all the public comments received will be given consideration as the project proceeds.

Sincerely,

Chris J. Magoc
PRBRC Organizer

Responses to Comment Letter 11

11.1 At the beginning of each resource section of the draft EIS (Chapter 2), Significance Criteria are identified. These criteria were used in determining the significance or insignificance of a particular impact.

11.2 Please see response to comment PH 2.

11.3 Please see page 248 of the draft EIS for the definition of interrelated projects. The definition explains why these other projects were included in the analysis. Although we do not fully understand the last point of your comment, we believe these concerns would be handled through negotiations between the company and the landowner before an easement agreement was signed. BLM cannot require stipulations on private land.

11.4 Please see response to comment PH 4.

11.5 Testing at 25 percent over normal operating pressure is considered by industry to be sufficient in detecting leaks.

11.6 These procedures would be determined when the company negotiated with the private landowner--before the landowner signed an easement agreement.

11.7 We agree that the pipe could corrode if left in the ground. However, removing the pipe would cause more damage to the environment, in addition to being more expensive. Therefore, it is standard practice to leave the pipe in the ground after abandonment.

11.8 See page 90, Significance Criteria, of the draft EIS for cropland criteria outside and within the project area. The 35 acres of cropland converted to other uses in the Gillette, Wyoming (Campbell County) area and 4 acres in the Belle Fourche, South Dakota (Butte County) would be much less than 1 percent of the total cropland within respective areas.

11.9 This subject will be negotiated between Exxon and those local governments having to issue road and bridge permits.

11.10 The landowners will each have an easement agreement with the company, whereby terms like this can be negotiated. BLM does not intervene in private easements.

11.11 The paragraph on page 103 of the draft EIS refers only to the Bairoil plant, product pipeline, product storage tank, and oil field distribution system. None of these parts of the project would affect any crucial big game winter ranges. The pipeline itself, however, would cross some crucial big game winter habitat.

Responses to Comment Letter 11 (concluded)

11.12 The statement on page 105 of the draft EIS says "Short-term removal of prairie dog habitat should cause no other significant impacts to the ferret. Since direct mortality had already been addressed, any other short-term losses of prairie dog habitat would be insignificant.

11.13 Exxon began intensive cultural resource surveys along the pipeline route during the summer of 1985. Any ground that would be disturbed by project activities will be surveyed for cultural resources before any work begins. (See Appendix 4 for Memorandum of Agreement.)

11.14 Please see response to comment PH 12.

11.15 BLM will distribute local press releases as more definitive proposals on the pipeline project become available. BLM also will respond personally to subsequent questions regarding project status.

11.16 If additional spur lines are proposed in the future, additional environmental analyses will be prepared.

11.17 Although prework conferences (referenced on page 183 of the draft EIS) are not open to the public, Exxon will work closely with each landowner before construction begins. The landowners will decide which stipulations or measures Exxon should follow on their land.

11.18 The transportation plan will be part of the Construction and Use Plan, which will need approval by federal agencies.

11.19 We also believe our team is made up of capable and knowledgeable people. Nonetheless, each person worked closely with other qualified specialists located in BLM and Forest Service field offices when developing the analyses. Also, range conservationists in each resource area and Forest Service personnel reviewed the EIS and provided additional information as needed. We are, therefore, confident that rangeland concerns were adequately explored and analyzed.

COMMENT LETTER 12

Shell Pipe Line Corporation

Two Shell Plaza
P.O. Box 2648
Houston, Texas 77001

October 31, 1985

Ms. Janis L. VanWyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, CO 80228

Dear Janis:

Enclosed are Shell's comments, including suggested changes, to the draft EIS for the proposed Bairoil/Dakota CO_2 Project. These comments are limited to Shell's proposed Cedar Creek CO_2 pipeline.

I truly enjoyed working with you on the EIS and I congratulate you on a job well done.

Yours very truly,

W. J. Jackson
Land and Environmental Department

WJJ/lr

Enclosures

BFNM8530403

COMMENTS ON BAIROIL DAKOTA CO_2 DRAFT ENVIRONMENTAL IMPACT STATEMENT

Page 1 para. 4. CO_2 could come from the McElmo Dome CO_2 fields near Cortez, Colorado.

Page 1 para. 5. Shell will not begin construction of its pipeline any earlier than the spring of 1987.

Page 2 para. 1. Shell would prefer to work with private landowners in developing measures, but BLM measures would be an acceptable alternative.

Page 32 para 12 line 3. Replace high with "in diameter".

Page 34 para 7 lines 5,6. Replace gas with "crude oil" and several with "two".

Page 36 para 4 lines 1,2. Replace trenched into with "installed in", and ditch with "right-of-way".

Page 40 para 1. Add: "-drying and cleaning" to the list.

12.1 Page 41 para 6 lines 7,8. Replace the with "either", add "s" to Code, and add "or B31.4" after B31.8.

Page 42. Table 9. Shell would make 10 one way truck loads per day for Spread 7, and would haul for about 25 days rather than 120 days.

Page 50 para 3. Add: "...railroad crossings only where required...". Shell would prefer to directly bore crossings and install carrier pipe without casing pipe in order to inhibit future corrosion problems.

Page 51 para 6 line 2. Replace needs with "uses" and add: "...in-house or contract inspectors...".

Page 52 para 10 line 1. Add: "...permanent jobs to its existing staff for the operation..."

Page 54 para 9. It is Shell's position that CO_2 is not a natural gas. Delete: "...However, based on other types of natural gas pipelines..."

Page 54 para 10 line 5. Replace explode with "ignite".

Page 56 para 3 line 1. Replace ended with "ends its projected economic life".

Page 62 Table 18. Shell would make 10 one way truck loads per day and would haul for about 25 days.

Page 69 para 5 line 13-19. Replace Amoco has determined with Amoco "and Shell have" determined that the landowners should develop their own measures and that the BLM General Resource Measures and Required Reclamation and Erosion

Control Procedures "would be an acceptable alternate."

12.1 cont.

Page 88. Based on Map A-5B the number system could be either north or south of the 0 milepost. This needs to be clarified.

Page 96. Little Beaver Creek is near Marmarth, North Dakota rather than Wyoming.

Page 109 para 3 line 8. Add: "...existing sites is unknown, but existing surveys have yielded minimal sites."

Page 131 Table 50. Based on Map A-5B the number system could be either north or south of the 0 milepost. This needs to be clarified.

Page 173 para 7 line 3. Replace Alberta with "Saskatechewan".

Page 173 para 7 line 6. Add: "...at the Shell operated Cedar Creek fields near Baker...".

Page 174 partial para line 1. Replace Alberta with "Saskatechewan".

Response to Comment Letter 12

12.1 Thank you for your comments. See Errata Summary for changes to identified text and tables. Also, please see revised map, Map 2, in Appendix 2 of this EIS for milepost changes to Map A-5B of the draft EIS. (Change to page 109 was not made because no evidence exists to support the statement.)

COMMENT LETTER 13

The Nature Conservancy

Tom Wolf
Protection Planner
719 Brookhaven Court, Suite D.
Fort Collins, Colorado 80525
(303) 493-1407

October 8, 1985

Janis VanWyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang St. First Floor East
Denver, CO 80228

Dear Ms. VanWyhe:

Thank you for the opportunity to comment on the draft Environmental Impact Statement for the proposed Bairoil/Dakota CO2 Project.

Our comments are drawn from the data base of the Wyoming Natural Heritage Inventory and from the Proceedings of the Wyoming Natural Area Needs Conference, of which Wyoming BLM was a co-sponsor.

Begun in 1979, the Wyoming Natural Heritage Inventory is an organized collection of data on the status and distribution of Wyoming's natural diversity--rare plant and animal species, as well as exemplary natural communities. The collection is cross-referenced in manual, map, and computer files. These data have been compiled from a broad range of sources, including the collection records of museums and herbaria, publications, and expert biologists throughout Wyoming. This information provides an objective basis for determining the rarity of species within the state. Except where specifically noted, all data have been field checked.

Like the 40-odd other state Heritage Programs initiated by The Nature Conservancy, the Wyoming Heritage Program employs standardized methods to process information about a state's natural elements. All Heritage programs are connected through a larger, nationwide information system that provides a national as well as a global perspective to the concept of rarity.

Held in November of 1984, the Wyoming Natural Area Needs Conference brought together all the scientists and administrators responsbile for defining the state's unique natural heritage. The consensus of the various working groups at the conference was published by The Nature Conservancy and made available to interested parties throughout the state, including the BLM planning staffs in the Districts covered by this DEIS.

The Nature Conservancy is a national private conservation group dedicated to the identification, preservation, and protection of biological natural diversity. The Conservancy's Public Lands Protection Planners work cooperatively with federal and state land management agencies to assist in the identification, designation, and protection of significant natural areas under the authority of public agencies.

13.1 We congratulate you on your effort in consulting both the Montana Rare Plant Project and the North Dakota Natural Heritage Program on p. 69. However, this makes it all the more mysterious as to why you did not similarly consult the Wyoming Natural Heritage data base, since most of the project is in Wyoming. This oversight can be easily corrected. If you will simply call our Regional Information Manager in Denver, Robin Voigt, giving her the coordinates of the areas to be affected by the pipeline, she could quickly consult our computer and tell you whether there are any potential problems. The number is: 860-9142, and the address is Rocky Mountain Heritage Task Force, 1370 Pennsylvania St., #190, Denver, CO 80203.

13.2 Because your maps do not give the precise coordinates, I have consulted the maps and manual files in the Heritage data base. These show that there there appear to be no problems with the proposed preferred route. However, we strongly recommend that threatened and endangered plant and animal surveys be conducted for the entire route, and that the results of these surveys be made available for incorporation into our existing data base.

13.3 On p. 103, we agree with your concerns for the narrow-footed Hygrotus diving beetle and for the piping plover. Especially in Natrona County, measures should be taken to protect these species, with particular emphasis on Cloud Creek, Dead Horse Creek, and Dugout Creek (MP223-234).

13.4 It is not clear from Project Map A-2 what effects your project would have on the upper reaches of Pine Canyon and Cedar Canyon (T22-23N, R104-105W, around MP 30). The plant communities in these two canyons remain unsurveyed, though a preliminary site visit by Nature Conservancy personnel in the summer of 1984 indicated that these sites may be of importance. If they are to be disturbed, they should be field checked by competent botanists beforehand, with appropriate mitigation measures taken. These surveys should be done in early summer of 1986, which would also be the right time for the above-mentioned T&E surveys.

Thank you for the opportunity to comment. We look forward to working with you on an improved final product.

Yours,

Tom Wolf

Responses to Comment Letter 13

13.1 Environmental Research and Technology (ERT) had contacted the regional information manager for Exxon during the summer of 1985. Per your request, we contacted ERT and have included some additional information in this EIS. Please see the Errata Summary for information added to page 69 of the draft EIS.

13.2 The Biological Assessment prepared by BLM and submitted to the Fish and Wildlife Service recommends Fish and Wildlife Service-approved surveys for all threatened or endangered species that may occur on the project areas. (Please see Appendix 3 for the Fish and Wildlife Service Biological Opinion.) Exxon has agreed to direct its contractor (ERT, Fort Collins, CO), which collected threatened and endangered plant and animal information, to provide the information to you.

13.3 Thank you for your comment; these two species will be considered in any planning for this or other projects in the areas you mention.

13.4 The proposed alignment would not affect the upper reaches of these canyons, since the pipeline corridor would be about 1 mile north of the upper reaches of Pine Canyon and 5 miles north of Cedar Canyon.

COMMENT LETTER 14

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Washington, D.C. 20230
OFFICE OF THE ADMINISTRATOR

November 7, 1985

Janis L. VanWyhe
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, Colorado 80228

Dear Ms. VanWyhe:

This is in reference to your environmental impact statment for the Bairoil/Dakota Carbon Dioxide Project. Enclosed are comments from the National Oceanic and Atmospheric Administration.

We hope our comments will assist you. Thank you for giving us an opportunity to review the document.

Sincerely,

David Cottingham

David Cottingham
Ecology and Conservation Division

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Washington, D.C. 20230

N/MB2:CMS

November 6, 1985

TO: PP2 - David Cottingham

FROM: N - Paul M. Wolf

SUBJECT: DEIS 8509.09 - Bairoil/Dakota Carbon Dioxide Projects

The subject DEIS has been reviewed within the areas of the National Ocean Service's (NOS) responsibility and expertise, and in terms of the impact of the proposed action on NOS activities and projects.

14.1 Geodetic control survey monuments may be located in the proposed project area. If there is any planned activity which will disturb or destroy these monuments, NOS requires not less than 90 days notification in advance of such activity in order to plan for their relocation. NOS recommends that funding for this project includes the cost of any relocation required for NOS monuments. For further information about these monuments, please contact Mr. John Spencer, Chief, National Geodetic Information Branch (N/CG17), or Mr. Charles Novak, Chief, Network Maintenance Section (N/CG162), at 6001 Executive Boulevard, Rockville, Maryland 20852.

Response to Comment Letter 14

14.1 Exxon states that all previously located survey monuments will be noted on the construction alignment sheets. Exxon further stated in its Construction and Use Plan that it will restore any survey monuments that are disturbed. If more monuments are found that could be disturbed, Exxon will contact the National Oceanic and Atmospheric Administration.

COMMENT LETTER 15

Natrona County Planning Commission
and
Natrona County Planning Department

P.O. Box 515 — 514 Wyoming Blvd
Mills, Wyoming 82644
Phone (307) 235-9405

November 8, 1985

Ms. Janis L. VanWyhe
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, Colorado 80228

Re: Draft Environmental Impact Statement
Bairoil/Dakota Carbon Dioxide Projects

Dear Ms. VanWyhe:

I am writing on behalf of the Natrona County, Wyoming Planning Commission and Board of County Commissioners. We wish to voice Natrona County's support for the proposed Bairoil/Dakota Carbon Dioxide Projects and specifically our support for the Exxon segment from Bairoil, Wyoming to near Tioga, North Dakota.

Our initial comment at the scoping stage expressed our concern over the pipeline being constructed outside of identified corridors. It is our understanding that the added cost of following existing corridors is enough to warrant the proposed alingment. Therefore, our comments will be addressed to mitigation of impact due to the proposed alingment.

15.1 The pipeline is directed through a relatively underdeveloped area of Natrona County. During construction it will be necessary for the construction crews to find housing. It has been our experience that these construction crews will attempt to park trailers on private and federal lands close to the pipeline. Often this results in improper solid and sanitary waste disposal, unauthorized utility hookups, and a demand for services that are not readily available. For these reasons we recommend that the workers be directed to Casper where housing is readily available. The companies can encourage this by providing bus transportation from Casper to the job site. It would be more efficient from an energy standpoint and would also mitigate the problems created by trying to provide services and housing near the pipeline. We feel this is an appropriate condition to be placed on the permit to construct.

If you have any questions or need any further information, please contact this office. Please forward all future correspondence.

Very truly yours,

Max L. Torbert
Natrona County Planning Director

MLT:bam

Response to Comment Letter 15

15.1 Exxon states that a contractor normally locates a construction office in the closest city or town having adequate facilities and services. The contractor then provides and encourages employees to use bus service to the job site. Exxon normally does not specify an office location. The Construction and Use Plan (prepared by Exxon and approved by BLM) will specify that camping will not be allowed on restricted public lands and that squatting or camping on private property without permission of the landowner will be prohibited. Employees will be informed of these restrictions.

Amoco Production Company
Denver Region
1670 Broadway
Post Office Box 800
Denver, Colorado 80201
303 830-4040

November 11, 1985

Janis L. Van Wyhe
Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street
First Floor East
Denver CO 80228

File: JDC-415-986.631

Dear Janis:

Amoco Production Company, an applicant for the federal action described in the Bairoil/Dakota DEIS, appreciates this opportunity to comment on the DEIS. We have restricted our comments to only those portions of the DEIS which addresses Amoco's proposal. Our comments concern three areas and are described by topic below:

Location of Bairoil Gas Plant

16.1 A statement is made on page v that the gas plant would be constructed on private land. The plant will be located in Section 18, T25N, R83W in Carbon County. This section is federally owned.

Single Bairoil Pipeline Alternative

16.2 The DEIS states that the BLM's preferred alternative is to grant a right-of-way for one CO2 pipeline from MP26 of the existing Rangely pipeline to MP111. The BLM also states that "the agency has no preference whether Exxon or Amoco would build the first 111 miles of main CO2 pipeline." Denial of one of the grants could compel Amoco and Exxon to enter into a joint venture to build a single pipeline. Alternatively, denial of one of the grants could force the denied applicant to accept a tariff higher than the costs associated with the construction of their own pipeline. In essence, BLM could restrict the opportunity for fair negotiations between the grantee and other parties and assure the grantee a "monopoly" on the transportation of CO2 in central Wyoming and as a result, a strong competitive edge over other parties in marketing CO2 in the area. We

believe that BLM lacks the authority to compel Amoco and Exxon to enter into such a joint venture and, even if BLM had that authority, it would be extremely unwise to compel construction of a single pipeline, especially considering the uncertainty of future CO2 markets and alternative supplies.

The DEIS is currently premised on the assumption that rights-of-way for CO2 pipelines are granted pursuant to the Mineral Leasing Act ("MLA") rather than the Federal Land Policy Management Act ("FLPMA"). While this assumption is based on a Solicitor's opinion dated July 20, 1984, we believe that opinion is erroneous. Exxon has filed an appeal seeking reversal of the Solicitor's opinion. FLPMA clearly does not grant the Secretary authority to compel joint ventures. Thus, if the rights-of-way were properly granted pursuant to FLPMA, BLM could not require a single pipeline.

16.2 cont. Even if the rights-of-way were granted pursuant to MLA, BLM could not require a single pipeline be built. While MLA does require common carriage, it does not authorize the Secretary to compel joint ventures either directly or indirectly. The MLA common carrier requirements do not permit the Secretary to compel expansion of facilities to meet anticipated demand. Champman v. United States, 204 F 2d. 46 (D.C. Circuit 1953). Since approval of a single pipeline could only occur if the Secretary compelled expansion of one of the proposed pipelines to satisfy the CO2 needs of both companies at a fair and equitable tarrif, the MLA common carriage requirement does not provide adequate authority for the Secretary to force Amoco and Exxon to accept a single pipeline.

There are very important considerations, other than the obvious tariff difficulties, which have required that we seriously consider the need for our own CO2 pipeline. In fact, several of these reasons are critical enough that, if not resolved, could make the Bairoil CO2 flood economically unattractive. A competitive price and guaranteed supply of CO2 for injection in our Bairoil fields are critical to continuing with our proposal. We understand that implementation of Phase II of Exxon's La Barge Project may be indefintely delayed due to a lack of CO2 sales commitments in the Williston Basin, and therefore given this potential supply shortage, Amoco has been compelled to look elsewhere to supplement our CO2 demand. Transportation of CO2 purchased elsewhere to Bairoil through a non-Amoco owned and operated pipeline could significantly and negatively affect the economics of our proposal.

As our plans for Bairoil begin to solidify, we are looking at other fields in Wyoming which may be candidates for CO2 enhanced oil recovery. With our

own pipeline, Amoco could pursue these other projects without external CO2 deliverability constraints. If we are tied by BLM to a pipeline owned and operated by another company, we could be restricted to a supply based on a space-available basis. The prospect of a higher tariff for delivery of CO2, if imposed by the operator of that pipeline, could make it uneconomical to pursue enhanced oil recovery in smaller fields.

16.2 cont.

If BLM were to compel construction of a single pipeline, the agency would then be placed in the position of allocating existing pipeline capacity, determining fair and equitable rates, arranging for expansion of pipeline capacity in response to undetermined future demand, and supervising operation and maintenance of the pipeline. In essence, BLM would serve the function of the Federal Energy Regulatory Commission with respect to this CO2 pipeline. That is a role that the BLM has repeatedly resisted. (See 1973 Senate hearings on Rights-of-Way Across Federal Lands). It is also a role wholly inconsistent with the Administration's emphasis on reducing unnecessary federal regulation.

Given the above concerns, Amoco requests that the BLM grant Amoco's right-of-way as filed in our September, 1984 application.

Socioeconomic Impact Analysis

16.3

After reviewing pertinent sections of the DEIS, Amoco is of the opinion that BLM has severely overestimated the socioeconomic impacts of the project for Bairoil, Carbon County and the City of Rawlins. In addition, it appears that project revenues have been underestimated. Rather than prepare lengthy comments on the DEIS, we suggest that BLM review the Wyoming Industrial Siting Permit Application for Amoco's Bairoil Project. A copy of our application is being sent to you under separate cover.

Respectfully,

Aaron

Aaron L. Clark
Coordinator of Environmental &
Regulatory Affairs

ALC/sma

Responses to Comment Letter 16

16.1 Thank you for your comment; see Errata Summary for change to the draft EIS Preface and other pages showing this information.

16.2 Thank you for your statement of preference. It was used in the decision-making process.

16.3 We believe the impacts have been addressed correctly, based on Amoco's initial right-of-way application. The impact analysis, as explained in the draft EIS, includes Exxon's project as well as Amoco's. Amoco and Exxon have since agreed to have Exxon build a single CO_2 pipeline, compatible with the Single Bairoil Pipeline Alternative (Letter 27, Letters Requiring No Response). Since the comment did not identify specific deficiencies (CEQ 1503.3), we cannot provide additional information nor revise the text.

EXXON COMPANY, U.S.A.
POST OFFICE BOX 1600 • MIDLAND, TEXAS 79702-1600

PRODUCTION DEPARTMENT
SOUTHWEST ROCKY MOUNTAIN DIVISION

November 11, 1985

Ms. Janis L. VanWyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, Colorado 80228

Dear Janis:

Exxon Company, U.S.A. and Exxon Pipeline Company provides the attached comments to the DEIS of the Bairoil/Dakota Carbon Dioxide Projects and to the Montana Supplemental EIS.

If you have any questions, please call Gary Simmons (phone 915/686-4103) of Exxon Company, U.S.A. or Roland Ivy (phone 713/656-6329) of Exxon Pipeline Company.

Yours truly,

TJT:ssf

Attachment

A DIVISION OF EXXON CORPORATION

Exxon Company, U.S.A.
Comments on DEIS

BAIROIL/DAKOTA CARBON DIOXIDE PROJECTS

	PAGE	PARAGRAPH	LINE	COMMENTS
17.1	6	2	4	Change "2,200" to "2,400".
	6	5	3-11	This paragraph should be altered to clarify which route is preferred in North Dakota - the route associated with the Proposed Action and the Single Bairoil Alternative or the Highway 85 Alternative.
	19	1	23	Change "two microwave repeater stations" to "twenty microwave repeater stations".
	40	Table 7	1	Under "Component-Main Pipeline, Spread 1" and under "Shell", 199 should be deleted.
	52	11	1	Replace "Once every other week" with "Once every three months, weather permitting.
17.2	11	Table 1	1	Exxon continues to believe that the proper statutory authority for granting rights-of-way for CO_2 pipelines is the Federal Land Policy and Management Act rather than the Mineral Leasing Act.
17.3	56	2	6	Comma should be after the word "depth" and not after the word "lake".
	69	3	12	Delete "22,".
17.4	76 & 78	Tables 26 & 28		In the Montana Counties the additional revenues are significantly different from those in the Montana Supplement (page 38, Table A-1). These differences should be explained.
17.5	77	Table 27		The point of production for CO_2 is in Sublette County, not Lincoln and Sweetwater Counties.
17.6	77	Footnotes	b	See previous comment.

	PAGE	PARAGRAPH	LINE	COMMENTS
17.7	78	Table 28		Lincoln County schools should not receive benefit from the proposed action. Sweetwater County schools benefits should not include any benefits from the CO_2 production, only from EOR facilities.
17.8	79	Table 29		Ad valorem tax on CO_2 production accrues to Sublette County only. Severance tax and federal royalties are allocated back to all counties/municipalities in the State based on population as a percent of total State population.
17.9	94	9	1	The sentence: "The main proposed route would cross 17 perennial streams 21 times at 19 locations . . . " is unclear.
17.10	110	Second line from bottom		Change "49" to "49R".
17.11	186	12	2	The entire ROW will not be mulched, only those critical areas such as steep side-slopes will be mulched.
17.12	191	15	1	Restricting clearing to no more than 10 miles ahead of backfilling operations is unnecessarily restrictive and not justified by environmental benefits.

Responses to Comment Letter 17

17.1 Thank you for your comments; please see Errata Summary for changes to identified text and tables.

17.2 The companies have modified their plans and will now be monitoring their pipelines quarterly. In addition, Amoco and Exxon may yet agree on building only one pipeline on the Bairoil segment. See errata changes for page 52 of the draft EIS.

17.3 Thank you for your comment. The Minerals Leasing Act is the authority for CO_2 pipelines under current BLM policy.

17.4 Thank you for your comments; suggested changes have been incorporated into the Errata Summary.

17.5 Figures shown in Tables 26 and 28 were computed for the in-place pipeline only. Table A-1 of the Montana Supplement addressed possible increased net benefits from injection of CO_2 (enhanced oil recovery). These possible revenues are in addition to those addressed in the draft EIS.

17.6 Your comment is correct. CO_2 would be produced from wells in Sublette County. All mention of CO_2 production in Lincoln and Sweetwater counties should be changed to Sublette County. (Table 28 has not been changed.)

17.7 This footnote would apply to Sublette County only.

17.8 Your comment is correct. Lincoln County schools will not receive benefits from the Proposed Action. Sweetwater schools would receive revenues from mill levies on the pipeline and from additional oil and gas production from the Lost Soldier and Wertz oil fields near Bairoil. Please see Errata Summary for correction to page 77 of the draft EIS. (Table 28 was not changed to reflect this because the impacts are positive.)

17.9 Your comment is correct. Only Sublette County would benefit from ad valorem tax on CO_2. (Table 29 has not been changed.) Severance tax and federal royalties shown for CO_2 in Sweetwater County would go to Sublette County based on population as a percent of total state population.

17.10 Please see the Errata Summary for clarification to page 94 of the draft EIS. Eighteen streams would have been crossed at 22 locations. At two locations, Exxon and Amoco would each have built a pipeline across the river. At one, Exxon proposed to build one pipeline and Amoco, two. The three companies proposed a total of 26 crossings.

17.11 Thank you for your comment; Table 40 footnote has been corrected in the Errata Summary.

Responses to Comment Letter 17 (concluded)

17.12 Appendix 4 of the draft EIS has been revised and reprinted. Please see Appendix 1 of this EIS for revision.

17.13 The measure is consistent with the BLM, Rock Springs District draft Construction and Use Plan.

COMMENT LETTER 18

United States Department of the Interior
NATIONAL PARK SERVICE
ROCKY MOUNTAIN REGIONAL OFFICE
655 Parfet Street
P.O. Box 25287
Denver, Colorado 80225

IN REPLY REFER TO

L7619 (RMR-PP)

NOV 13 1985

Memorandum

To: Project Leader, Bureau of Land Management, Denver, Colorado
Attention: Janis L. VanWyhe

From: Associate Regional Director, Planning and Resource Preservation, Rocky Mountain Region

Subject: Draft Environmental Impact Statement (DEIS), Bairoil/Dakota Carbon Dioxide Projects, North Dakota, Montana, and Wyoming (DES 85/38)

We reviewed the subject DEIS and offer the following comments.

Enclosed is a copy of a March 7, 1985, memorandum from the Chief, Energy, Mining and Minerals Division, National Park Service (NPS) providing scoping comments on the projects. The issues raised in those comments, we believe, are inadequately addressed in the DEIS.

18.1 For example, the air quality analysis for the projects is incomplete. In the March 7 memorandum, it was suggested that construction and operation of Phase II of Exxon's La Barge (Wyoming) gas processing plant would be necessary to produce sufficient CO_2 (330 million cubic feet per day - CFD) to make the Bairoil project viable. Bringing Phase II on line would increase sulfur dioxide (SO_2) emissions by 110 percent and add to the region's total sulfur loading. Several nearby NPS and Forest Service (FS) class I areas and three Fish and Wildlife Service (FWS) refuges could be affected. An analysis of the possible air quality impacts of Exxon's La Barge Phase II should be included in the final EIS.

18.2 We request that you review the March 7 memorandum to insure that all of the concerns expressed therein are considered in subsequent versions of the EIS.

18.3 The DEIS does not include an analysis of the possible impacts of the CO_2 pipeline project and future enhanced oil recovery on the Class I and Class II air quality areas, including Theodore Roosevelt National Park and Lostwood National Wildlife Refuge in western North Dakota. Enhanced oil recovery would increase the total sulfur loading in the vicinity of those NPS and FWS areas, and could have adverse impacts on the air quality related values of those areas. Analysis of the impacts on air quality of enhanced oil recovery in the vicinity of the NPS and FWS areas brought about by the CO_2 pipeline project, including effects of additional suspended particulate matter generated by the construction phase, should be included in the final EIS.

18.4 When addressing visual impacts, the DEIS states that microwave tower heights could range from 20 to 300 feet. One microwave site (#18) would be located slightly over 2 miles from the Theodore Roosevelt National Park. This would not be a concern, as it would be adjacent to other radio towers, unless it extends over 200 feet in height. A height greater than 200 feet would require installation of blinking red lights, which would be highly visible from inside the park at night. The night sky is an important visual resource for park visitors. If a high, lighted tower is needed to connect the microwave path between sites 17 and 18, we would prefer that it be placed at site #17, where two lighted radio towers already exist. This would group the impact at a location 13 miles from the park. The DEIS does not state how often maintenance would be required or how line condition would be monitored. Utility lines are often patrolled by ground vehicles or aircraft. Low altitude flights for monitoring utility lines impact the North Unit in terms of visual sensitivity and wilderness values.

18.5 The maps supplied with the DEIS, in general, provide useful, accurate references. We noted a few exceptions. Map A.1 (Regional Overview of Projects) does not show the location of Theodore Roosevelt National Park, making it difficult for readers unfamiliar with the area to assess potential impacts. Moreover, each of the specific units on Map A.1 should be labeled; it is not sufficient to know that an area is a national park or national forest, if the reader does not know the name by which it is referred to in the text. Map 7 shows the park (incorrectly referred to as Map 3 on page 59), but this does not negate the need for labeling the parklands on Map A.1. Also, range coordinates on Map A.4 contain an error; R84W and R85W should be reversed.

18.6 The U.S. Highway 85 alternative (page 137) states that wilderness effects would be the same as those projected for the proposed action. The pipeline would run within 1/8 mile of the park boundary and fewer than 2 miles from the wilderness portion of the North Unit.

The route of the Proposed Action would be approximately 18-20 miles east of the North Unit. As called for in the draft general management plan for the park, pipelines and similar structures would be located at least a few miles east of the park (North Unit) boundary. A folder map of the park is enclosed.

18.7 We noted somewhat contradictory statements on Threatened and Endangered species. Page 5 does not provide the rationale for the "no effect" statement concerning whooping cranes, peregrine falcons, and bald eagles which are found in the park. A similar statement is found on page 105. We could not locate a copy of the biological assessment required by the FWS (see page 213). We assume that the policy on page 181 - "No activities will be authorized until consultation is complete as specified by Section 7(c) of the Endangered Species Act" - will be carried out. We suggest that surveys of prairie dog colonies be conducted as recommended in: Handbook of Methods for Locating Black-footed Ferrets (1984)-Wyoming Bureau of Land Management (BLM) Technical Bulletin No. 1. These surveys should be completed prior to construction.

18.8 On page 69 is mention that floodplains and wetlands will not be discussed in the DEIS because construction and operation of the pipelines would have no effect on these resources. Yet, we note that floodplains and wetlands are mentioned in the discussion of riparian vegetation on page 84 as being present, and Table 33 lists riparian as one of the vegetation types that will be disturbed. Also beginning on page 94 (under Water Resources) is frequent mention of impacted wetlands and floodplains, e.g., "The main proposed route would cross 17 perennial streams 21 times at 19 locations, including their 100-year floodplains. . ." This is especially important because of Section 404 Permit requirements for these projects (see page 191 of the DEIS), with potential impacts on park resources.

18.9 Another item listed as "no effect" on page 69 is National Wild and Scenic Rivers. However, Map A-1 shows that the proposed pipeline will apparently cross a Nationwide Rivers Inventory (NRI) segment of the Little Missouri River in North Dakota, and page 122 refers to the same crossing and mentions that it is a designated State Scenic River. This segment of the Little Missouri River is listed in the NRI for its outstanding scenic, recreational, geological, biological, and cultural values.

We note (in "References Cited") that you are using the 1980 Nationwide Rivers Inventory prepared by the Heritage Conservation and Recreation Service. A copy of the 1982 revision prepared by the National Park Service is enclosed for future reference.

18.10 Microwave site number 19 (Dunn County, North Dakota) is located within Killdeer Mountains, a proposed National Natural Landmark (NNL) area. There should be provision for avoiding impacts that could adversely affect the outstanding ecological and geological features of this proposed NNL.

There are conflicts in the discussions on National Historic Trails. For example, it should be clearly shown that the proposed pipeline crosses the coinciding Oregon Trail and the Mormon Pioneer Trail in the vicinity of Split Rock, east of Jeffrey City, Wyoming. We suggest that the following language (from our review of pages 16 and 17 of BLM's draft management plan - "Oregon/Mormon Pioneer National Historic Trails, Wyoming" - August 1985) be added to the "Provisions and Measures Designed to Reduce Environmental Impacts" section of the EIS (Appendix 4).

18.11 Right-of-way crossings of the protective corridors may be made. All crossings will be accomplished to minimize surface disturbance in the protective corridor. Crossings may be allowed in areas where trail ruts have been modified by modern uses, where previous crossings exist, or where new corridor crossings would not damage trail remains. All crossings will avoid fragile trail resources. Crossings will be made at right angles to the trail and corridor unless they follow a previous crossing, in which case they may deviate from a right angle. Vegetative species indigenous to the protective corridor will be used to rehabilitate right-of-way related surface disturbance. Any disturbed area will be returned to a natural contour.

Stipulations will be developed in consultation among the project proponent, adjacent private landowners, and BLM personnel. The stipulations will govern exactly where and how the right-of-way will cross the corridor and how

18.11 cont. rehabilitation procedures will be used to restore the area. Qualified cultural resource specialists or BLM personnel will be on-site during the construction phase of the project to ensure that the requirements of the right-of-way permit are met.

We look forward to reviewing the final EIS for these projects, and hope that our comments will assist you in its preparation. You may contact the following individuals for further information.

Air Quality (NPS) FTS 776-8761, Mr. Erik Hauge.

Water Resources (NPS) FTS 776-8765, Ms. Barbara West.

National River Inventory (NPS) FTS 776-8705, Mr. Duane Holmes.

National Natural Landmarks (NPS) FTS 776-8699, Ms. Carole Madison

Theodore Roosevelt National Park (NPS) (701)623-4466, Superintendent Mr. Harvey Wickware.

Richard A. Strait

Enclosures

Responses to Comment Letter 18

18.1 Exxon Shute Creek Phase II was analyzed in the Riley Ridge Natural Gas Project Environmental Impact Statement (BLM 1983). Impacts to Class I areas were also analyzed in the Riley Ridge EIS and its supporting air resources technical analysis. Other information on this subject is contained in Exxon's PSD permit and supporting analyses for both Phase I and Phase II units.

Emissions and resulting environmental impacts from the Shute Creek Phase II development were not re-analyzed because previous analyses on the Exxon Shute Creek facilities did not reveal unacceptable impacts to local Class I or other high interest areas.

18.2 Thank you for your comment. During scoping, all letters and memorandums received were analyzed to develop the document scope. Concerns that were not within the scope or had been previously analyzed in other environmental documents were not addressed further in the draft EIS.

18.3 Potential impacts to North Dakota Class I and II areas from enhanced oil recovery (EOR) cannot be analyzed because it is not known how or in which fields CO_2 EOR would be used. When (or if) this information becomes known, each action will be addressed under mineral leasing laws and National Environmental Policy Act (NEPA) requirements, as the situation dictates.

EOR activities would not necessarily increase sulfur loading in the vicinity of National Park Service and Fish and Wildlife Service areas. For example, Bairoil EOR activities analyzed in the EIS will actually reduce sulfur emissions over the existing situation. Also, the nature of emissions from potential EOR activities in North Dakota is so questionable that analysis would not be meaningful.

Air Quality Related Values (AQRVs) on Class I areas could be adversely affected in North Dakota if significant air pollutants were emitted. Before AQRVs can be analyzed for impacts, they must be defined by the Class I manager. The analysis would require using rather specific information on proposed emissions at chosen locations. This activity can be conducted when EOR projects are defined, contingent upon the definition of AQRVs by the Class I manager for the area(s) in question. Class II areas do not, under the Clean Air Act, have AQRVs as defined for Class I areas. Again, high resource values that may be affected by air pollution will need to be formally established by the responsible land manager before they can be adequately analyzed.

Particulate emissions have been analyzed for the entire study area. No long-term unacceptable impacts or violations of appropriate standards are anticipated.

18.4 The microwave tower (18) at Fryburg, North Dakota would be less than 200 feet high and not require lights according to Exxon. The pipeline route would be inspected by using low-flying aircraft once every 3 months.

Responses to Comment Letter 18 (concluded)

18.5 Please see errata change to page 59 of the draft EIS. We apologize for the oversight on labeling the Theodore Roosevelt National Park on Map A1. The base was the Geological Survey National Atlas, Northern Great Plains (last revised 1972). We added only the oil fields and the lines for the proposed project.

18.6 Table 59, page 146, of the draft EIS identifies both the crossing of the Little Missouri River and the proximity of this alternative to the north unit of the National Park. Although both are identified as highly sensitive areas visually, the impacts would be similar to those identified for the proposed route.

18.7 The statement in paragraph 3, page 5 of the draft EIS, is a summary statement. The rationale for summary statements on threatened or endangered species can be found on page 105 of the draft EIS. The Biological Assessment has been submitted to the Fish and Wildlife Service as per requirements in the Endangered Species Act of 1973. Included in the Biological Assessment are recommendations for Fish and Wildlife Service-approved surveys for all species that may be affected from this project.

18.8 Thank you for your comment. Please see Errata Summary for clarification to page 69 of the draft EIS.

18.9 See Errata Summary for recommended changes to page 69 and Table 48 of the draft EIS.

18.10 Significant impacts are not expected since the site is near an existing microwave site and has already been disturbed. (See page 50, Table 4 in the draft EIS.)

18.11 Thank you for the information on the Norman Historic Trail. Please see the Errata Summary for changes to Table 40.

Your suggested mitigation is covered by the Memorandum of Agreement for cultural resources in Appendix 4 of this final EIS. BLM prefers to work with the state historic preservation officers specifically on each trail crossing, rather than using one measure to cover all different circumstances.

WYOMING CHAPTER
SIERRA CLUB
Route 62, Box 164
25 E. Main Street
South Pass City, WY 82520

November 9, 1985

Jaris L. Van Wyke, Project Leader
Bureau of Land Management
Division of EIS Services
555 Lang Street, First Floor East
Denver, Colorado 80228

To the Project Leader:

Thank you for the copy of the Fairoil/Dakota Carbon Dioxide Projects DEIS. Several positive aspects characterize this study. I concur with the BLM's choice of the Single Fairoil Pipeline as its preferred alternative, for this will minimize ground disturbance along the initial 140 miles of the project. I also commend the BLM for grouping several projects into one study. In this manner, the agency and the reviewer can assess the related and cumulative impacts of the various pipelines and other facilities. Finally, I agree that the BLM should not give its permission for the pipelines north of Fairoil if Exxon and Shell do not locate markets for their CO_2.

19.1 I have some concerns and comments on specific parts of this project. First, the study does not indicate if the proposed project will follow existing pipeline corridors north of Fairoil. Keeping within previously disturbed areas is important in reducing environmental impacts, especially to wildlife and cultural resources. If the Exxon-Amoco pipeline is not within an existing corridor, near Sweetwater Rocks, then I object to the location of the pipeline within 100 feet of this WSA's boundaries. New ground disturbing activities will adversely affect the visual qualities of these areas.

19.2 Second, Table 40 on page 110 is confusing. I believe that the BLM and the Wyoming State Historic Preservation Office have agreed that the Bryan-South Pass City Stage Road, the Point-of-Rocks - South Pass City Stage Road, the Oregon Trail, and the Bozeman Trail are eligible for the National Register of Historic Places. Therefore any physical remains associated with these trails are historically significant and should be avoided. Unfortunately, the table offers information on the "eligibility" of a small segment of these trails and then their "condition." To confuse matters further, some segments are classified alike as having "ruts' not intact", yet have differing eligibility determinations. What is the definition of ruts which are "not intact"? If ruts exist, then they are the physical remains of an historic site which is eligible for the National Register. If all traces of the trail have been destroyed, then the trail no longer exists there. It is impossible to have an ineligible segment of an eligible trail.

"Not blind opposition to progress, but opposition to blind progress."

19.3 Essentially, all portions of this project should avoid any existing physical remains, including primitive two track roads, associated with historic trails which are on or eligible for the National Register. If a pipeline will intersect trail remains, then the pipeline should be rerouted to a previously disturbed section of the trail. The Wyoming SHPO should be consulted on all possible impacts to cultural sites, including trails. In addition, a BLM archeologist or historian should monitor all trail crossings. During construction of the Frontier pipeline, the company destroyed several feet of significant remains of the Oregon Trail near highway 287. Since the proposed pipeline will be following Frontier's route, this trail crossing will be especially important to monitor.

19.4 Third, given the existence of acid deposition in a state that contains mountain ranges with very little buffering capabilities, I am encouraged that the new Fairoil gas separation plant will decrease the emission of SO_2 from that area. However, since large companies have been known to change plans suddenly, I urge the BLM to stipulate that the existing Wertz plant must be dismantled, as Amoco plans to do at this time.

19.5 Fourth, as noted on page 4 of the DEIS, increased poaching may occur as a result of the implementation of this project. The BLM should stipulate that all construction crews not be permitted to carry any firearms in the field.

19.6 Finally, I am concerned about the manner in which Exxon, Amoco, and Shell are approaching this project. The portion of the project north of Fairoil is nothing more than speculation. The companies have not located any markets for their CO_2. I object to the federal government spending thousands of dollars in compiling an environmental impact statement on a scheme created by three oil companies. In addition, speculation on public lands has exacerbated the mineral boom and bust cycles which Wyoming communities have experienced for the past 120 years. Communities are already beginning to anticipate the influx of workers associated with the Fairoil project. Private landowners have been forced into negotiations with companies who refuse to answer basic questions on the unknown route of a pipeline which may never be built. Enough disruptions already occur in Wyoming as a result of legitimate, defined projects without introducing more through the study of speculative ventures. Essentially, the BLM should not be examining, and thus promoting, speculative projects. Adopting such a policy would be economically and socially responsible to the local communities.

If you have any questions or comments, please do not hesitate to contact me. Thank you for your time and consideration.

Sincerely,

Mike Massie

Mike Massie
Chairman

P.S. Even though I have written this letter before the Nov. 12 deadline, heavy mountain snows may prevent its delivery before Tuesday night. South Pass City is 35 miles from a post office. I hope that these comments are still considered.

COMMENTS AND RESPONSES

Responses to Comment Letter 19

19.1 The proposed pipeline would be within the Frontier Pipeline corridor to MP 140, just northeast of the Sweetwater Rocks Wilderness Study Area. Beyond that point to Tioga, North Dakota, 195 miles of the remaining 503 miles would parallel roads or existing pipelines. See Table 6 of the draft EIS for pipelines and roads that would be paralleled by the proposed pipeline.

19.2 and 19.3 Thank you for your comments. These concerns are addressed under the consultation and protection measures required by the cultural resource Memorandum of Agreement (Appendix 4 of this EIS).

19.4 Amoco must go through a permitting process with the State of Wyoming, ISA. ISA would be the regulatory agency responsible for making the recommended stipulation.

19.5 BLM has no authority to require firearm restrictions--your suggestion was forwarded to the company for consideration.

19.6 All money spent by the Federal Government in preparing environmental impact statements on right-of-way proposals is paid ahead of time by project proponents and does not come from appropriated funds. The Bureau (BLM) is obligated to complete an environmental evaluation when an application is received.

COMMENT LETTER 20

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
ONE DENVER PLACE — 999 18TH STREET — SUITE 1300
DENVER, COLORADO 80202-2413

NOV 12 1985

8PM-EA

Janis L. VanWyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, Colorado 80228

Dear Ms. VanWyhe:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the Region VIII office of the Environmental Protection Agency (EPA) has reviewed the Bairoil/Dakota Carbon Dioxide Projects Draft Environmental Impact Statement (DEIS). The following general comments and the attached specific comments are offered for your consideration in preparation of the final Environmental Impact Statement (FEIS).

EPA is aware of and participated in the extensive scoping process the Bureau of Land Management (BLM) conducted prior to the writing of this document. The BLM is to be commended on its response to the scoping concerns expressed by EPA and other respondents on the proposed activity.

The proposed action and route as described in the DEIS, would appear to be an environmentally acceptable route in that it will circumvent environmentally sensitive areas. The proposed route segment following a designated Forest Service corridor through the Little Missouri National Grasslands in North Dakota should result in minimum disturbance. Since the proposed route will parallel significant road mileage, especially if the U.S. Highway 85 Alternative is selected, additional discussion of potential health effects due to pipeline rupture should be included. **20.1**

The DEIS discusses the need for and identifies the location of automatic block valves for the pipelines crossings of the Green River and Lake Sakakawea. Since potential detrimental effects on aquatic life and water quality due to CO_2 release have been identified, EPA requests consideration of block valve location on both sides of Value Class I and II stream crossings. **20.2**

We recommend a rating of LO for this DEIS. This means that while EPA does not object to the proposed action, we recommend additional discussion as noted be included in the final EIS. If you have any questions please contact Mike Hammer of my office at 293-1716.

Sincerely,

Dale Vodehnal

Dale Vodehnal, Chief
Environmental Assessment Branch

Specific Comments of the Bairoil/Dakota
Carbon Dioxide Projects Draft Environmental
Impact Statement

	Page	
20.3	18	Under Overview of the Proposed Action and Alternatives. What would be the predominant forms and relative concentrations of total sulfur in the pipeline CO_2?
20.4	46	There appears to be some inconsistancy between the statement in paragraph 5 that stream crossings would be constructed in late summer to early winter, to eliminate impacts on aquatic species and the construction schedule for main-line by AMOCO and the Bairoil spur projecting final construction by the end of July.
20.5	50	Concerning location of small buried pipelines in oil fields; not all oil field pipelines are metalic. Other methods for locating existing non-metalic pipelines may need to be developed.
20.6	50	The discussion of runoff control should be expanded to promote sheet runoff rather than diversion into concentrated streams unless special runoff conduits and energy dissipators are installed.
20.7	95	The designation of Montana Water Quality Classification in Table 36 should read "C-3" instead of "O-3".
20.8	95	The DEIS acknowledges that a Section 404 dredge and fill permit will be required for the Lake Sakakawea pipeline crossing. Other stream crossings which will require individual permits should be identified.
20.9	191	EPA requests the Appendix 4 discussion of the U.S. Environmental Protection Agency Section 404 evaluation of the Army Corps of Engineers Permit read that the evaluation will be conducted in compliance with Section 404(b)(1) guidelines.

Responses to Comment Letter 20

20.1 Page 127 of the draft EIS identified potential effects to health from a pipeline rupture.

20.2 After a discussion with Mike Hammer of your office on November 22, 1985, we understand that the Value Class referenced is the fishery classification (Table 36 of the draft EIS). Given this assumption, two rivers have a Class I value and none have a Class II. The Green River would be flanked by block valves; the two crossings of the Little Missouri River would not, because the concentration of CO_2 would probably dissipate rapidly enough to avoid harming the fisheries. In addition, at the two crossing points, no sport fish are present.

20.3 This information has been added to the EIS. Please see the Errata Summary for additions to page 18 of the draft EIS.

20.4 Under the original proposals, there would be three crossings of the Green River and four crossings of Crooks Creek--two at each of two locations. Both Amoco and Exxon will be required to build crossings at the Green River in the fall. If, after Crooks Creek has been evaluated, BLM decides the aquatic values require fall crossings, then the two companies will be required to build these crossings in the fall also.

20.5 Many companies using non-metallic pipelines also run a metallic cable underground with the pipe to facilitate use of metal finders. Existing non-metallic pipelines can also be located by using personnel from local oil and gas companies who are familiar with the area.

20.6 The items outlined in the Backfilling and Grading section of Appendix 1, Required Reclamation and Erosion Control Procedures, identify adequate and effective measures for erosion and runoff control.

20.7 Thank you for your comment; please see Errata Summary for correction to Table 36.

20.8 Adding a list of all crossings requiring a Section 404 permit would not affect the impact analysis. The Corps of Engineers, as a cooperating agency in preparing the EIS, is aware of the crossings requiring a permit.

20.9 Please see Appendix 1 of this final EIS, which is revised from the draft (draft EIS--Appendix 4).

COMMENT LETTER 21

JOHN L. LAMB

809 12th Avenue North
Fargo, North Dakota 58102
(701) 232-9281

AUDUBON SOCIETY OF FARGO-MOORHEAD

November 12, 1985

Janis VanAyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang St., 1st Floor East
Denver, CO 80228

Dear Ms. VanAyhe,

The following comments on the Draft EIS for the Bairoil-Dakota CO2 Projects are offered in the spirit of encouraging the BLM to leave no stone unturned while investigating the "planned" or the proposed projects.

21.2 1. We believe that additional consideration should be given to alternative G, Deferred Implementation, p. 85, and to a No-Action Alternative, p. 81. We think that there are alternative sources of CO2 available as manufacturing by-products of North Dakota industries, such as the Synfuels Plant at Beulah and other energy conversion plants, and that they should be considered in the final plan.

21.1 2. In the discussion of affected environment with respect to water resources from p. 94 - 98., no mention is made of the disposal of saltwater, except to mention that "no liquid wastes are anticipated". Is this accurate? Will tertiary recovery operations produce no saltwater? There is still some doubt among hydrologists about the advisability of injecting waste saltwaters into the Dakota Aquifer, the currently accepted disposal method. We feel the BLM should address this important question, before they encourage continued development by planning the pipeline to be built. We don't believe that the potential for groundwater pollution has been addressed adequately under the draft plans.

3. We understand that the oil industry believes tertiary recovery operations must continue without interruption in order to maximize total production, and minimize potential reservoir damage. We wonder if this is in fact the case. We would like to see some of North Dakota's petroleum resources remain in the ground for later use, when prices are better, and when our national needs are more clearly defined. We want the BLM to consider conserving some of their North Dakota mineral estate for later development, when a real emergency need situation is clearly defined, not just because the oil industry and exhibitionist think a need is present.

For the Audubon Society of Fargo-Moorhead

John L. Lamb, Conservation Co-Chairman

111

Responses to Comment Letter 21

21.1 Thank you for your concern; this information was considered in the decision-making process. However, CO_2 from the Beulah plant was determined less economical than other sources. (See related response to comment PH 16.)

21.2 No liquid wastes are anticipated. Tertiary oil recovery may produce saltwater in some fields; however, except for the EOR project proposed by Amoco at Bairoil, this EIS does not analyze enhanced or tertiary oil recovery. Additional projects must be specifically analyzed in future environmental documents.

COMMENT LETTER 23

United States Department of the Interior
FISH AND WILDLIFE SERVICE

MAILING ADDRESS
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225

STREET LOCATION
134 Union Blvd.
Lakewood, Colorado 80228

IN REPLY REFER TO:
HR
MAILSTOP 60120

NOV 13 1985

MEMORANDUM

To: Project Leader, Bairoil/Dakota Carbon Dioxide Projects EIS, BLM, Denver, Colorado

From: Assistant Regional Director, Habitat Resources, FWS, Region 6

Subject: Draft Environmental Impact Statement (DEIS) for the Bairoil/Dakota Carbon Dioxide Projects (EC 85/64)

The subject DEIS has been reviewed by Fish and Wildlife Service (FWS) Ecological Services Field Offices in Billings, Bismarck, Cheyenne, and Pierre. Since the important impacts to fish and wildlife resources are in Wyoming and North Dakota, our comments center on those two States.

General Comments

The DEIS adequately addresses fish and wildlife resources for the North Dakota alternatives. Major concerns to minimize impacts to these resources in the rugged terrain of the North Dakota Badlands, Little Missouri National Grasslands, and the breaks along Lake Sakakawea have been resolved through early cooperation in the scoping process between the Bureau of Land Management (BLM), Forest Service (FS), FWS, North Dakota Game and Fish Department (NDGFD), and the Exxon Corporation and their consultants. The BLM and Exxon were very responsive to our environmental concerns and dropped the original alternative alignment through the North Dakota Badlands and along the Little Missouri River. Two new alignments, Exxon's preferred alignment and a Highway 85 alternative, are located east and west, respectively, of the original alignment and impact significantly fewer acres of sensitive wildlife habitats. Bighorn sheep, golden eagles, prairie falcons, ferruginous hawks, and other sensitive species along the selected alignment will be protected by special mitigative measures.

The recommendations made for the Wyoming segment of the project in our scoping comments have for the most part been addressed. However, we note that our recommendation for avoiding extra crossings of the Green River were not included in the proposed action or any of the alternatives.

The BLM has initiated formal consultation with the FWS Endangered Species Field Office in Helena, Montana. As a result, all endangered species issues associated with the project will be addressed through the consultation process.

Specific Comments

1. Page 15, Paragraph 3 - This paragraph states that before construction begins, a company shall pay for required surveys for nests of Federally protected raptors. The FWS has fairly good raptor data for the alignment corridors with the exception of the northern Little Missouri River crossing and the west side of the southern Little Missouri River crossing. We are currently coordinating with Exxon's consultants regarding raptor inventories for these areas next spring. Any nests located in close proximity to the pipeline corridor will be protected by applying mitigative measures to the construction activities.

2. Page 47, Paragraph 4 - Pipeline construction across perennial streams and Section 10/404 permit standards are discussed. Although the FWS provided generic recommendations during the scoping process, we will provide site-specific comments on any Section 10/404 permit applications to the Corps of Engineers during the construction phase.

23.1 3. Pages 89 and 132 - Disturbance and removal of riparian vegetation. All riparian vegetation disturbed should be returned to its preproject status or mitigated. This restoration effort should be coordinated through the Cheyenne Ecological Services Substation, FWS and the Wyoming Game and Fish Department.

23.2 4. Page 95, Table 36 - Cherry Creek, a tributary to the Little Missouri River east of Watford City, North Dakota, is correctly designated as a Value Class III fishery. However, brook trout, a coldwater species, are not found in this warmwater stream. The table should be corrected accordingly.

23.3 5. Page 97 - We are concerned with the possibility, as indicated in the DEIS, that State water quality standards for turbidity may be temporarily violated during pipeline construction. Construction should be as short term as possible and any downstream habitat adversely affected by project induced turbidity should be mitigated as needed.

24.4 6. Page 103, Threatened or Endangered Animal Species - By memorandum dated March 29, 1985, the FWS provided the BLM with a Section 7 species list of endangered, threatened, or proposed species. This list included the piping plover (Category II species proposed for threatened status) which may occur as a breeder or during migration. The endangered least tern, which uses similar habitat, also should be listed as a species that may be present in the project area along the Little Missouri River or Lake Sakakawea.

7. Page 134 - Water Resources - A single crossing of the Green River is preferable to the two crossings of the proposed alternative. However, as we indicated in our scoping comments, we recommend that the pipeline tap the Rangely Carbon Dioxide Pipeline on the east side of the Green River (after that pipeline crosses the Green River) to avoid impacts to riparian and aquatic resources along this river by another stream crossing. This alternative would eliminate two additional river crossings. **23.5**

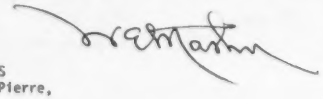
8. Page 180-181, Appendix 4 - Provisions and Measures - Our recommendations on raptors and other sensitive wildlife species have been incorporated into the DEIS (Appendix 4) as mitigative measures. Proper timing of construction activities will allow development to proceed while minimizing impacts to sensitive wildlife like golden eagles, prairie falcons, and bighorn sheep. The specific BLM and FS provisions and measures for wildlife should adequately protect fish and wildlife species of concern.

Conclusion

In North Dakota, the FWS favors the Highway 85 alternative over the preferred route as it is within an environmentally acceptable pipeline corridor with few wildlife conflicts. However, the FWS believes that development of either alternative could occur without significant adverse impacts to wildlife provided the mitigation requirements are met.

An important concern in Wyoming is the effect of stream crossings on aquatic and riparian habitat. Based on information presented in the subject document, we prefer the single Bairoil pipeline alternative. This alternative impacts fewer acres of wildlife habitat and involves one less Green River pipeline crossing than the proposed alternative. We also have no major problems with the Crooks Gap option.

Plans for wildlife mitigation should be coordinated with the State wildlife agencies and the FWS Ecological Field Offices in Cheyenne and Bismarck.



cc: SE, Regional Office, FWS
ES Billings, Bismarck, Pierre,
and Cheyenne, FWS
SE, Helena, MT
Washington, DC (EC)

Responses to Comment Letter 23

23.1 As stated in Appendix 1, Required General Resource Measures (Item 5.b.), and Required Reclamation and Erosion Control Procedures, riparian vegetation disturbed by project activities will be restored. Restoration efforts will be coordinated with appropriate agencies at specific locations.

23.2 Thank you for your comment. Please see correction to Table 36 in the Errata Summary.

23.3 As stated on page 104, right column, paragraph 4, of the draft EIS, "most impacts to fisheries from turbidity occur during long-term chronic sedimentation conditions, which would not occur with this project." Appropriate measures would be required on any Section 404 or 10 permits, thus preventing any significant impacts to fisheries.

23.4 The piping plover has been addressed in the Biological Assessment. The Helena office of the Fish and Wildlife Service indicates that the least tern does not occur in the area where the pipeline crosses the Little Missouri River or Lake Sakakawea (November 20, 1985).

23.5 Thank you for the suggestion. If the proposed pipeline tapped into the Rangely pipeline on the east side of the Green River to avoid another crossing, the pipeline would cross some very rough country. Because important scenic and wildlife areas could be affected near Rock Springs where the pipeline rejoined the Frontier Pipeline corridor, this possibility was not considered in detail. Although the Green River would be crossed by the Proposed Action, the crossings would be within the existing Frontier Pipeline corridor.

COMMENT LETTER 24

STATE OF WYOMING
OFFICE OF THE GOVERNOR
CHEYENNE 82002

ED HERSCHLER
GOVERNOR

November 12, 1985

Mrs. Janis L. VanWyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, CO 80228

Dear Mrs. VanWyhe:

The draft environmental impact statement on the Bairoil/Dakota carbon dioxide projects has been circulated for state agency review. Copies of agency comments are enclosed for your consideration and use. These comments should be fully considered and reflected, where appropriate, in the final environmental impact statement.

The proposed Bairoil/Dakota carbon dioxide projects have the potential to provide a number of benefits to the project proponents, various levels of government, and the general public. Implementation of the projects will provide additional markets for the carbon dioxide produced at Exxon's Shute Creek facility, resulting in conservation and use of a valuable natural gas rather than undesirable venting of carbon dioxide to the atmosphere. Utilization of the Shute Creek carbon dioxide in enhanced oil recovery projects, such the Amoco Bairoil project, will also improve the conservation and recovery of valuable oil reserves. The employment, income, and tax revenue related to Bairoil/Dakota carbon dioxide projects will be welcomed in Wyoming. These projects fit well within our economic development strategy of enhancing the conservation, recovery and processing of Wyoming's mineral resources. Moreover, the impacts of the carbon dioxide pipeline and related project construction appear primarily of a short-term nature. These impacts can be avoided, controlled and/or mitigated through the concerted efforts and cooperation of the project proponents and pertinent federal, state and local agencies.

For the above reasons, I strongly urge the approval and necessary permitting of the Bairoil/Dakota carbon dioxide projects. The Agency Preferred Alternative, to grant a right-of-way under the 1920 Mineral Leasing Act for a single CO_2 pipeline to the Bairoil area, appears to have significant environmental and economic benefits. Hopefully the ongoing negotiations between Exxon and Amoco will reach the same conclusion.

In closing, I encourage the Bureau of Land Management to approve the Bairoil/Dakota carbon dioxide projects in an expeditious manner. I look forward to working with the project proponents in making these proposals a reality. Please keep me informed of the progress in these efforts.

Yours sincerely,

EH:pcl

Enclosures

cc: Hillary Oden w/comments

State of Wyoming

Oil and Gas Conservation Commission

SEP 26 '85

GOVERNOR ED HERSCHLER CHAIRMAN
COMMISSIONERS
HOWARD M. SCHRINAR GARY B. GLASS MARVIN A. KELLER BERN WHITTAKER
STATE OIL AND GAS SUPERVISOR
DONALD B. BASKO

September 26, 1985

Mr. Dick Hartman
Office of State Planning
Coordinator
State Capitol Building
Cheyenne, WY 82002

Re: The Bairoil/Dakota Carbon Dioxide Projects,
State Identifier 85-200

Dear Mr. Hartman:

I am in receipt of the draft Environmental Impact Statement on the Bairoil/Dakota Carbon Dioxide Project prepared by the Bureau of Land Management.

The proposed project could result in the construction of a pipeline from Rock Springs, Wyoming to Tioga, North Dakota carrying CO_2 from the Riley Ridge Area in Western Wyoming. CO_2 is one of the gases used in tertiary recovery projects throughout the nation and is becoming more popular because of the efficiency with which it moves reserves to the wellbore.

Potentially, there are several hundred fields in the Powder River Basin alone that could use CO_2 in tertiary recovery methods. The Interstate Oil Compact Commission has made a preliminary estimate that Wyoming has in excess of 400,000,000 barrels of oil that could be recovered by enhanced recovery techniques. If this oil were recovered, it would increase our reserves by 39%. That additional oil has an estimated value of 10.5 billion dollars ($10,500,000,000,000), of which five hundred million dollars ($500,000,000) will go to the state and local governments for taxes, not counting mineral royalty return money. From a conservation and economic point of view, this project must be approved. Otherwise, we run the risk of leaving untold millions of barrels of oil unrecovered in Wyoming reservoirs.

Very truly yours,

Donald B. Basko

Donald B. Basko,
State Oil and Gas Supervisor

DBB:wal

777 WEST FIRST STREET P.O. BOX 2640 CASPER, WYOMING 82602 (307) 234-7147

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

EXECUTIVE DEPARTMENT

Office of Industrial Siting Administration

THIRD FLOOR BARRETT BUILDING CHEYENNE, WYOMING 82002 TELEPHONE: 307-777-7368

October 30, 1985

Mr. Dick Hartman
State Planning Coordinator
Wyoming State Clearinghouse
Herschler Building, 2nd Floor East
Cheyenne, Wyoming 82002

Re: Bairoil/Dakota Carbon Dioxide Projects DEIS, SIN-85-200

Dear Dick:

The Staff of the Industrial Siting Administration has reviewed the draft environmental impact statement for the Bairoil/Dakota Carbon Dioxide Projects (SIN-85-200) and offers the following comments for your consideration:

1. General

Our comments regarding socioeconomic impacts of these projects are minimal since some of the information presented in the DEIS is inconsistent with information that we have received. Amoco expects to file a Permit Application with the Industrial Siting Administration and this Application will provide considerable detail on existing socioeconomic conditions and expected impacts. This Application will be available for public review and will be provided to the BLM.

2. General

24.1 Throughout the DEIS there is little information about the gas treatment plant site. It is inconsistent that the DEIS contains drawings and maps of the meter, booster and microwave repeater stations but no details for the processing plant. Information should be provided for the plant, including pad construction, borrow areas, runoff control, topsoil salvage, interim stabilization, and final reclamation.

3. Summary (p2)

24.2 In the Summary (p2) and at page 69, it is stated that neither the Proposed Action nor the alternatives would affect floodplains or wetlands. We assume this statement is in error (without further explanation) since the document later addresses the numerous floodplains that will be crossed by the projects.

4. Maps 2 and 3 (pp23,33)

Without regard to which company constructs the pipeline, it appears that the Exxon alternative should be the preferred alternative for the CO_2 pipeline to the Bairoil Project for the following reasons:

a. The CO_2 pipeline could originate at MP 26.0 of the Rangely pipeline rather than at MP 49.0, saving 23 miles of additional pipeline and two crossings of the Green River.

b. If the larger pipeline is constructed, the pipeline could terminate at Bairoil for the near term. The pipeline could be extended by Exxon when CO_2 markets develop in northeastern Wyoming and other states. In contrast, if the smaller pipeline is built to Bairoil, Exxon would have to construct another pipeline to supply future markets in northeastern Wyoming and beyond.

5. Ancillary Facilities (p34)

24.3 The amount of sulfur to be stored at Amoco's proposed gas treatment plant near Bairoil, the market for the sulfur and routes that would be utilized for shipments should be provided. In the event that a market is not found, plans for disposal of the sulfur should be provided.

6. Composite Proposed Action (p36)

The construction of two parallel pipelines from the Green River to Bairoil would be redundant and an unnecessary disturbance of 686 acres of land (p.58), most of which is public land. Only one pipeline should be allowed. As mentioned on page 40, the BLM State Director should authorize only one pipeline if Amoco and Exxon cannot agree that only one pipeline is needed.

7. Gas Plant Operation and Maintenance (pp52,53)

24.4 a. If the plant expansion after 10 years of operation will involve additional disturbances of land, the amount of disturbance required should be described.

b. The geologic formation and depths for the water supply to the Battle Springs wells should be included.

24.5 c. Other water users, if any, affected by withdrawal of groundwater for the Bairoil Project should be listed.

d. The width of the current cone of depression around the Battle Springs wells and the effect on the cone of depression due to withdrawals for the Bairoil Project should be provided.

24.6 e. More information should be provided on the "approved" disposal site for solid wastes.

8. Abandonment (p56)

24.7 This section refers the reader to Appendix 4, which focuses on the pipeline and the abandonment of the plant. Plans for abandonment of the plant site after the useful life of the plant should be discussed.

9. Socioeconomics (p80)

24.8 The document appears to be contradictory with regard to impacts to the Town of Bairoil. On page 2, the document states that impacts to Bairoil would be significant. However, on page 80, it is stated that, "Impacts to the quality of life in Bairoil are likely to be insignificant since Bairoil has a small population and was originally built as a construction town." It seems obvious that the quality of life in a town such as Bairoil would suffer more simply by virtue of the fact that it is so small and not as adaptable to increased demands as a larger town offering more services. Although the level of impact Bairoil receives may be restricted by its limited growth capacity, the document does not actually come out and say this. The document goes on to state on the same page that cumulative impacts to housing, public services and facilities, and quality of life in Bairoil would be significant. This is confusing, because Bairoil is beyond the scope of impact from the Exxon LaBarge and Chevron Phosphate projects and should not be seriously impacted by the cumulative effects of these projects.

10. Transportation Networks (p93)

24.9 As indicated on page 93, the Proposed Action would result in an additional 244 vehicle trips per day on Wyoming State Highways 372 and 73. Control of parking for construction workers should be discussed, particularly where construction activities cross private lands. At a minimum, the BLM should require each company to develop a plan for control of construction worker parking at isolated job sites.

11. Water Resources (p97)

In Wyoming, the acquisition and disposal of water for hydrostatic testing should be coordinated with the Wyoming Game and Fish Department, besides the Department of Environmental Quality and the State Engineer. Companies need to be made aware that the Game and Fish Department should be contacted even though the Department has no specific regulatory control over hydrostatic test waters.

12. Wildlife (p105)

24.10 Insufficient information is provided to determine impacts to wintering bald eagles. At page 105, it is stated that construction could destroy winter roost trees but the reader is unaware of whether this refers to a broadly defined roost area or a specific, well-defined communal roost. Communal roost areas should be avoided entirely by the pipeline. Even for broadly defined roost areas, tree density, the potential for winter emergency/maintenance activities along the pipeline, and the possibility of new powerlines (e.g. to block valves) should all be considered.

13. Recreation (pp124-126)

24.11 The statement on page 5 that "impacts to recreation sites and users from the Proposed Action would be insignificant" is not supported by any analysis. The DEIS does not include an analysis of potential impacts to camping facilities in the vicinity of the proposed pipeline or to the plant facilities at Bairoil. For example, the DEIS predicts there will be 50 campers near Bairoil (i.e. construction workers choosing to camp during the construction period rather than selecting housing in a nearby community). Where would these campers reside? If all 50 chose the closest developed camping facilities (Seminoe State Park with 81 camping spaces), the subsequent impacts to the Park and to legitimate recreation users of the Park would certainly be significant. The DEIS does not even mention Seminoe State Park, or Pathfinder, or any other developed sites in the vicinity of the projects.

14. Recreation (pp124-126)

24.12 The EIS is rather unclear with respect to impacts to recreation. On page 125, the document cites potential problems with camping in non-designated campgrounds. It also acknowledges that demands for recreation opportunities could exceed supply, albeit for less then 2 years. Further, proposed rights-of-way and access roads may create new and improved access for RV use, but with it may also come negative impacts on hunting and other resources. However, in another statement, the document puts forth the standard argument the crews will have little time for leisure activities. But then on page 126, under

24.12 cont. Cumulative Impacts, the document states that, "Additional impacts on non-urban recreation cannot be predicted, but would most likely occur in the above-mentioned communities." This last statement appears to support the need for monitoring to ascertain the actual level of project impact on resource-oriented recreation.

15. Recreation (p125)

The DEIS suggests that there could be significant impacts due to long-term camping (squatting) in non-designated areas by construction workers. However, appropriate controls to minimize these potential impacts are not identified. The potential problem is not limited to squatting in non-designated areas for long periods since even existing campgrounds in the vicinity of the projects can be adversely impacted due to the heavy demands on camping facilities by the workforce and by construction workers overstaying allowable camping periods. Though camping is allowed only for periods not to exceed 14 days at State Parks, a construction worker could move from campsite to campsite every 14 days and conceivably utilize a State Park for an entire recreation season. This would detract from the intended use of these areas; that is, by the recreating public. The Wyoming State Parks System does not have the enforcement capability to control potential problems created by a construction workforce utilizing a State Park for temporary residency.

24.13 The FEIS should note that, for the Exxon CO_2 pipeline proposal, the Company has committed to the following condition in the Wyoming Industrial Siting Permit (ISC-85-2) for the Exxon LaBarge Project:

> In order to deter CO_2 pipeline construction workers from illegally camping on public and private lands, Exxon will provide information on trespass laws and current laws regarding use of public lands by way of the Environmental Awareness Training Program and will contractually require all contractors to discipline any employee found illegally using public or private land up to and including dismissal.

Regardless of which company builds the pipeline(s), the FEIS should consider impact controls or mitigating measures to assure that squatting will be minimized. Likewise, companies should work closely with the State Parks Division of the Wyoming Recreation Commission to assure that State Parks in the vicinity of pipeline construction are not adversely impacted.

16. Crooks Gap Option (p162)

24.14 Unless the project maps are carefully reviewed, it is not readily apparent from the text of the DEIS why the Crooks Gap Option was developed. We assume it was developed to avoid the rough terrain in the vicinity of Green Mountain.

24.14 cont. Are there other reasons? The only reason we could find for this option was that it "was developed to bypass the Proposed Action from MP111 to MP120." (p162).

17. Appendix 4 (pp180-187)

24.15 a. On page 180, item 1.f. discusses topsoil salvaging for the pipelines but does not discuss topsoil removal for the plant site and other facilities such as meter, booster, and microwave repeater stations. Since topsoil is a natural resource, the BLM should require that all topsoil be removed from all disturbances and be reused for reclamation.

24.16 b. The "certain streams" that will receive special protection as described in item 5.i. on page 182 should be listed.

24.17 c. The BLM fencing requirements referred to in item 10.c. on page 183 should be described, and should agree with fencing designs of the Wyoming Game and Fish Department as detailed in WDEQ Land Quality Division Guideline No. 10.

24.18 d. The minimum requirements BLM will require in the "litter policing policy" referenced on page 183 in item 11.b should be described.

24.19 e. Contrary to item 12.g on page 183, weed control should not be limited to "whenever the authorized officer finds a weed-control problem." Instead, company personnel should be trained to recognize weed problems and seek immediate advice from local weed control experts without waiting for an authorized officer to find the problem.

24.20 f. The first paragraph of the Revegetation section states that "revegetation efforts will continue until a satisfactory vegetation cover is established." The criteria that will be used to determine "satisfactory vegetation cover" should be listed. Vegetation productivity and species diversity should be considered when determining revegetation success. Proposed seed mixes for Wyoming should be listed.

18. Revegetation (p186)

24.21 As stated on page 186, introduced (non-native) plant species may be considered for inclusion in seed mixes under specific conditions. The BLM's recommended use of certain non-native species in reclamation seed mixes has occasionally been in direct conflict with the recommendations of some state agencies. Of

24.21 cont. particular concern is the use of non-natives in areas of important wildlife habitat. Our recommendation would be that only native species be utilized in revegetation seed mixes for the Wyoming portion of these projects in riparian areas, areas identified as big game critical range, and within sage grouse breeding complexes (2-mile buffer around a sage grouse lek) unless otherwise reviewed and approved by the Wyoming Game and Fish Department.

19. Uncommitted Mitigation (p200)

24.22 Regarding disturbances to windbreaks and shelter belts, the right-of-way permit should be conditioned to include impact controls unless specified otherwise by the landowner.

20. Uncommitted Mitigation (p200)

24.23 The document suggests that one means of lessening social and economic impacts to Bairoil would be to develop a work camp with temporary housing for construction and contract personnel. Since the majority of these in-migrant workers will be living in Rawlins, this suggested mitigation would be detrimental to the economy of Rawlins and would create more problems for Bairoil than would otherwise occur.

Thank you for the opportunity to comment.

Sincerely,

Richard C. Moore, P.E.
Director

RCM/TCC/lb

THE STATE OF WYOMING

Ed Herschler, Governor
Lars Mangum, Superintendent and Chief Engineer

Wyoming State Highway Department

P. O. BOX 1708 CHEYENNE, WYOMING 82002-9019

October 17, 1985

Draft EIS Comments
Baroil/Dakota Carbon Dioxide Projects
State ID 85-200

Mr. Dick Hartman
State Planning Coordinator
Wyoming State Clearinghouse
Herschler Bldg. - 2 East
Cheyenne, WY 82002

Dear Mr. Hartman:

24.24 Our involvement is with the pipeline element of the subject project. Ten state highways will be crossed and each will require a license. These are issued by our District Engineers. Three districts will be involved; the district offices are in Rock Springs, Casper and Sheridan.

In addition, the following actions should be taken:

1) The DOT Office of Pipeline Safety should review and pass judgement on the pipeline design.

2) All welds within 200 feet of highway rights of way should be x-rayed.

3) Provisions should be included in permits to assure that design operating pressures are not exceeded.

Very truly yours,

William P. King

William P. King, P. E.
Environmental Services Engineer

WPK/mg

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

WYOMING RECREATION COMMISSION

122 WEST 25TH- HERSCHLER BLDG CHEYENNE, WYOMING 82002

ALVIN F. BASTRON P.E.
Director
777-7695

October 21, 1985

Mr. Dick Hartman
State Planning Coordinator
Wyoming State Clearinghouse
Herschler Building
Cheyenne, WY 82002

RE: 85-200

Dear Mr. Hartman:

The Wyoming Recreation Commission (WRC) received a copy of the Draft Environmental Impact Statement for the Bairoil/Dakota Carbon Dioxide Pipeline Projects on September 24, 1985. Thank you for the opportunity to participate in the review process.

While the Bureau of Land Management is to be commended for preparing an informative report on the proposed CO2 pipeline projects, their analysis is not without some serious shortcomings, especially in regard to recreation impacts. As the "lead" agency for coordinating the various recreation-related issues in Wyoming, the WRC is hopeful the following concerns will be adequately addressed through the review process.

24.25 The BLM contends that the impact of the proposed pipeline projects on outdoor recreation resources will be "insignificant and temporary" (DEIS, pp.5) and that current recreation needs within communities adjacent to the project are being met (DEIS, pp. 124). However, little if any documentation is provided to support these contentions. In fact, available data suggest just the opposite is true. The proposed action would involve a construction force of 1720 workers in Wyoming, the bulk of which would be located in Sweetwater and Carbon counties (DEIS, pp. 71, Table 22). The total population effects from such a workforce would be nearly 2400 people in Wyoming. A population force of this size will undoubtedly impact recreation resources. Data from the Draft 1985 Wyoming State Comprehensive Outdoor Recreation Plan (SCORP) indicate that outdoor recreation facility needs for those counties which would be directly affected by this project (particularly Carbon, Sweetwater, Natrona and Campbell counties) are already acute for many urban and resource-oriented recreation activities.

DAN WADHA PRESIDENT 1017 Avenue B Sheridan 82801
JACK D. OSMOND VICE PRESIDENT Box 748 Afton 83110
MRS. ROBERT FRISBY TREASURER 2807 Newton Ave Cody 82414
MARK ANSELMI 1430 Elk St Rock Springs 82901
LARRY BIRLEFFI 609 E. Apache Cheyenne 82003
MRS. ELIZABETH FIELD P.O. Box 584 Newcastle 82701
ALBERT PILCH P.O. Box 67 Lyman 82937
T. LAWSON SCHWOPE 900 Fover Ave Cheyenne 82001
JAMES A. WILLIS 740 E Sweetman Rd Douglas 82633

COMMENTS AND RESPONSES

24.25 cont. The BLM admits in the DEIS that many construction workers may opt to camp rather than stay in the more traditional lodging accommodations, such as motels, apartments, and trailer parks. It is estimated that as many as 50 workers in some counties may be forced to camp due to regional housing shortages (DEIS, pp. 74, Table 25). However no mention is made in the DEIS regarding just where such workers are supposed to camp. According to the 1985 SCORP Draft, Carbon and Sweetwater counties alone show a combined deficit of nearly 1600 campsites.

24.26 The WRC maintains that public campsites are to be used for recreational camping and are not intended to serve as temporary residences. Such use causes conflicts and displaces other recreationists who have a legitimate right to use such facilities. If workers choose to simply set up camp somewhere on public land where no facilities of any type exist, litter, sanitation and other types of resource abuse can become serious problems. By brushing over these impacts, the BLM is in effect condoning squatting as an acceptable alternative to conventional housing accommodations. Such an attitude is unacceptable. At a minimum, the BLM should work with the various project-related companies to develop a plan to reduce squatting and to minimize its effects on the resource. Further, if squatting is inevitably going to occur, the BLM should attempt to provide for such use. "Sacrifice areas" could be established for workers who prefer (or have no other choice but) to camp where at least a bare minimum of services and facilities including portable restrooms, water, and trash facilities are provided. This would help in minimizing the impact of squatting on both dispersed and developed recreation resources.

The DEIS states that the nature of the work schedule for the proposed pipeline projects is such that individual workers will have little time off to recreate (DEIS, pp. 125). While it may be true that workers will typically work six to seven days per week, the time off they do receive generally will come in large blocks of time. Further, it is likely that many workers with a specialized skill such as welding will be temporarily laid off once a particular aspect of construction is complete for a section of pipeline only to be rehired at a later date to work on another section of the pipeline. In addition, such workers are generally young, single males earning relatively high wages. The WRC has learned from experience that this segment of the population traditionally places the greatest demands on recreation resources.

24.27 When the potential impacts of this proposed project are considered in conjunction with the affects of other interrelated energy development projects in the region, the cumulative impacts to recreation resources will undoubtedly be great. All too often however, impacts (and appropriate mitigation measures) are considered on an individual project basis rather than a collective basis. If impacts attributable to individual projects are estimated to be below the 10% significance criterion, mitigation measures typically are not required even though the cumulative impacts may be great. Consequently, a cooperative mitigation approach involving all the interrelated project sponsors in the region should be developed to address cumulative impacts occurring within the area of influence.

24.28 Another concern relates to the impact the proposed pipeline projects could have on the visual character and the natural integrity of dispersed tracts of land with high recreation potential. An inventory of the recreation use potential of dispersed tracts within the coal regions of Wyoming was prepared by the WRC in 1982. Although the inventory was never completed, the following parcels of land are located within the immediate vicinity of the proposed pipelines in Wyoming and have been identified as having high recreation potential on the inventory. In these areas, necessary precautions should be taken to insure the recreational and visual features are not severly compromised by construction activities or the project itself.

COUNTY	TOWNSHIP	RANGE	SECTION	OWNER	RECREATION VALUE
Sweetwater	23	102	16	state	medium
Sweetwater	23	102	9	federal	medium
Sweetwater	23	102	10	federal	medium
Sweetwater	18	107	6	private	medium
Sweetwater	19	108	36	state	high
Sweetwater	19	108	25	private	high
Sweetwater	19	108	23	private	high
Sweetwater	19	108	22	state	medium
Sweetwater	19	108	15	private	medium
Sweetwater	19	108	9	private	high
Sweetwater	19	108	5	private	high
Sweetwater	19	108	6	federal	high
Sweetwater	20	108	30	federal	high
Sweetwater	20	108	31	private	high
Sweetwater	20	109	26	federal	medium
Sweetwater	20	109	23	private	medium
Sweetwater	20	109	22	federal	high
Sweetwater	20	109	15	private	medium
Sweetwater	20	109	16	state	medium
Sweetwater	20	109	9	private	medium
Sweetwater	20	109	5	private	high
Sweetwater	20	109	4	state	high
Campbell	49	74	28	private	high
Campbell	47	74	5	private	medium
Campbell	54	71	31	private	high
Campbell	54	71	32	private	high
Campbell	55	71	32	private	medium

24.29 In summary, the WRC feels that the BLM should reassess the potential for the proposed CO2 pipeline projects to impact outdoor recreation resources. As a suggestion, the BLM may wish to incorporate data from the 1985 SCORP Draft into their analysis. (The WRC would be happy to provide the BLM with any recreation information they feel would be useful).

24.30 Also, the BLM should require the various project companies to develop a coordinated mitigation plan which would address both individual project-related outdoor recreation impacts as well as cumulative impacts from other interrelated energy development projects in the region. Such a mitigation plan could be based in part upon the forthcoming results of a recreation monitoring program currently underway in southwestern Wyoming. This regional recreation monitoring program is being conducted by the Department of Geography and Recreation at the University of Wyoming and the WRC and will identify energy development impacts to outdoor resources in the region as well as cost-effective mitigation measures to reduce such impacts. The BLM should consider requiring the various companies involved in the construction and operation of the different components of this proposed project to participate in the regional recreation monitoring program.

While the agency preferred alternative (i.e., the Single Bairoil Pipeline Alternative) appears to be the most resonable alternative, the WRC cannot endorse any alternative until the concerns raised in this letter are adequately addressed.

If you have any questions regarding this review or desire additional information, please contact this office.

Sincerely,

Alvin F. Bastron

Alvin F. Bastron, P.E.
Director

AFB/MF/lr

121

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Water Development Commission

HERSCHLER BUILDING TELEPHONE 307-777-7626 CHEYENNE, WYOMING 82002

Michael K. Purcell
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Walter J. Pilch
Willard C. Rhoads
Meri Rissler
Kathleen Sun
Nelson E. Wren, Jr.

October 3, 1985

TO: Dick Hartman, State Planning Coordinator's Office

FROM: John W. Jackson, Deputy Administrator

SUBJECT: Bairoil/Dakota Carbon Dioxide Projects - Draft Environmental Impact Statement

I have reviewed the proposed CO_2 pipeline proposed actions and alternatives. There appears to be no direct impacts on any water supply projects that are currently being considered by the Commission. The pipeline routes avoid any reservoir sites; however, there is the potential that water delivery pipelines may have to cross the CO_2 Pipeline in the future. The proposed CO_2 pipeline also traverses an area of potential groundwater development in the Split Rock area. This should not be a serious problem.

Thank you for the opportunity to review the draft EIS.

JWJ:kg

Attachment

COMMENTS AND RESPONSES

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

NOV 4 19[illegible]

State Engineer's Office

HERSCHLER BUILDING CHEYENNE, WYOMING 82002

October 31, 1985

MEMORANDUM

TO: Paul Cleary, Natural Resources Analyst
State Planning Coordinator's Office

FROM: Louis E. Allen, Water Resources Engineer

SUBJECT: State Identifier No. 85-200; Bairoil/Dakota Carbon Dioxide Projects, Draft EIS; BLM, September 1985.

Water-related matters appear to be adequately addressed in the subject DEIS, with one exception. The permitting systems of Montana, North Dakota, and Wyoming are recognized, the necessity of a permit from the appropriate State for hydrostatic test water is noted, procedures and requirements for protection of water quality are sepcified, and the integrity of streams at crossings is provided for. We would have no significant problems with any of the alternatives, although we would prefer to minimize stream crossings.

24.31 The exception is lack of mention of the requirements, at least for Wyoming, for protection of water conveyance systems, and that there be no interference with the duly permitted uses of water without the consent of the owner of the State issued permit for water use. This may possibly be assumed from the wording of paragraph 10.a on page 182 of Appendix 4 where "watering facilities" are mentioned, but it would be a shaky assumption. Protection of water conveyances such as ditches and pipelines, and non-interference with permitted water uses or sources of supply needs to be specifically set out. I found no allusion in the DEIS to this situation beyond the above-referenced paragraph.

24.32 I have no other comments or suggestions relating to water at this time. I did note errors on page 148 in the first paragraph under Transportion Networks: "Jefferson City" should be "Jeffrey City", and "Freeman County" should be "Fremont County".

Thank you for the opportunity to review this DEIS. Your referral memorandum is being returned as requested.

cc: George L. Christopulos
State Engineer

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Department of Environmental Quality

AIR QUALITY DIVISION

122 WEST 25TH STREET CHEYENNE, WYOMING 82002 TELEPHONE 777-7391

MEMORANDUM

TO: Randolph Wood, Director
Department of Environmental Quality

THROUGH: Charles A. Collins CAC
Engineering Supervisor
Air Quality Division

FROM: Michael Stoll MS
Inspection/Enforcement Officer
Air Quality Division

DATE: October 9, 1985

SUBJECT: Comments on the Draft Environmental Impact Statement for the Bairoil/Dakota Carbon Dioxide Projects

24.33 The Bureau of Land Management should be advised that the VOC (Non-Methane) standard listed in Table 41 no longer exists in this state. In Table 42, the preparer has listed Class III PSD increments for Wyoming. There are no Class III areas in this state and there are no Class III prevention of significant deterioration increments.

Amoco will be required to submit a permit application to the Air Quality Division for construction of the proposed Bairoil plant. A detailed analysis will be made at that time.

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Department of Environmental Quality

SOLID WASTE MANAGEMENT

122 WEST 25TH STREET
HERSCHLER BUILDING

CHEYENNE, WYOMING 82002

TELEPHONE 307-777-7752

MEMORANDUM

TO: Mr. Randolph Wood, Director
State Department of Environmental Quality

FROM: Tim Link, Solid Waste Management Specialist
Solid Waste Management

DATE: October 9, 1985

SUBJECT: Comment Concerning Bairoil/Dakota Carbon Dioxide Projects Draft EIS

The Solid waste Management staff offers the following comments concerning the Bairoil/Dakota Carbon Dioxide Projects, Draft EIS.

P.53, "Operation of the plant would require the disposal of solid wastes, including charcoal, waste from filters used in gas separation catalysts, hydrocarbon waste sludges, hay, and diatomaceous earth. All of these wastes would be nontoxic and would be disposed of in accordance with regulations at an approved disposal site."

If Amoco decides to dispose of industrial process solid waste into a disposal site in Wyoming, all industrial process waste streams will need to be characterized and analyzed to determine toxicity before the Department can authorize disposal into a facility that is designed to accept this type of waste.

P.183, "Construction sites will be maintained in a sanitary condition at all times; waste at those sites will be disposed of promptly at an authorized site. Waste means all discarded matter, including human waste, trash, garbage, refuse, oil drums, petroleum products, construction materials, ashes, and equipment."

24.34 Potentially hazardous construction waste materials such as waste oil, waste epoxy adhesives, used solvents and containers, waste paint and containers, etc. cannot be disposed into State permitted landfill sites unless approval is received from the Department.

Thank you for allowing us to provide comments on the Bairoil/Dakota Carbon Dioxide Projects, Draft EIS.

THE STATE OF WYOMING

NOV 6 1985

ED HERSCHLER
GOVERNOR

Public Service Commission

HERSCHLER BUILDING

122 W. 25TH STREET

CHEYENNE, WYOMING 82002

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DIRECTOR MOTOR TRANSPORTATION
WILLIAM L. JOHNSON
DIRECTOR RATE AND TARIFF

MEMORANDUM

TO: State Planning Coordinator

FROM: Jon F. Jacquot, Chief Engineer JFJ

DATE: November 5, 1985

SUBJECT: Draft Environmental Impact Statement for the Bairoil/Dakota Carbon Dioxide Projects-Identifier 85-200

The first basic concern of this Commission regarding the environmental impact of the subject project is the impact upon its utilities. Pacific Power and Light Company is the certificated utility at the location of all three booster stations that require electrical power on the route of this line in Wyoming. Pacific has informed us that they would have no problem providing the electrical energy needed by the booster stations. Supplying this energy would require the construction of some rather lengthy distribution lines.

24.35 The Draft Environmental Impact Statement provides some conflicting information as to the location of the Amoco booster station in the Green River area. The final Environmental Impact Statement should show the proper location for this booster.

24.36 Table 1 of the Draft Environmental Impact Statement indicates that both the Public Service Commission and the U.S. Department of Transportation have jurisdiction over these facilities. To our knowledge these facilities are not jurisdictional to either the Commission or DOT.

According to the Draft Environmental Impact Statement, the Exxon line Northeast of Bairoil can be routed either over the Green Mountains or through Crooks Gap. We would encourage Exxon to construct the line through Crooks Gap to avoid scarring the face of the Green Mountains.

This concludes our comments. Thank you for the opportunity to do so.

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Game and Fish Department

November 8, 1985

BILL MORRIS
DIRECTOR

EIS 630/L26
USDI/BLM-Riley Ridge
Bairoil/Dakota CO_2 Projects
DEIS & T&E Species.

State Planning Coordinator
Herschler Bldg.
Cheyenne, WY 82002

Attention: Mr. Paul Cleary

Dear Mr. Cleary:

Our Fisheries personnel have reviewed this Draft EIS and offer the following comments for use in completing the Final EIS and issuing the necessary rights-of-way.

1. We recommend the Single Bairoil Pipeline Alternative which would eliminate a pipeline crossing of the Green River. The Green River is a Class I Stream of national significance. It is managed under the basic yield concept, so stocking of rainbow trout and Snake River cutthroat trout fingerlings is done to supplement the population of these species. The brown trout population is maintained entirely by natural reproduction.

24.37

2. Crossing of Perennial Streams. There are several places in the document that discuss perennial stream crossings, however the numbers mentioned are not consistent.
   a. Page 94, Affected Environment, 2nd paragraph states the proposed route would cross 17 perennial streams 21 times at 19 locations.
   b. Page 95. Table 36 lists 18 different streams that will be crossed by the proposed action.
   c. Page 103. Aquatic Wildlife, 1st paragraph states the proposed action would cross 18 different perennial streams 26 times at 21 locations.
   d. Page 157. Resource Comparison, 4th paragraph states the proposed action would cross 18 perennial streams 26 times at 22 locations.

24.38

3. Page 103. Aquatic Wildlife, 3rd paragraph. This paragraph lists three streams where trout could be affected by a pipeline crossing depending upon the exact crossing location. Two of these streams (East Cottonwood Creek and Willow Creek) are not listed in Table 36. The third stream (Dry Creek) is listed in Table 36, but the milepost number is different in this paragraph than in the table. On page 104, Aquatic Wildlife, the 2nd paragraph also states East Cottonwood Creek and Willow Creek as streams that would be crossed, while Dry Creek is mentioned with yet a different milepost number.

Headquarters: 5400 Bishop Boulevard, Cheyenne, Wyoming 82002

24.39 4. Page 104. Aquatic Wildlife, paragraph 5. The loss of one year's reproduction cannot be considered insignificant. In most cases this can be highly significant.

24.40 5. Page 104. Aquatic Wildlife, paragraphs 3, 4 and 5 still tend to be confusing and contradictory in nature as we stated in item 6 of our June 26, 1985, comments on the Preliminary D.E.I.S.

24.41 The recreational socioeconomic impacts of this project and interrelated projects (excluding Exxon's LaBarge project) in southwest Wyoming must be addressed. When these projects are considered separately the recreational demands may not be significant, however with the peak work forces of these projects occurring at the same time, the combined influence becomes very significant.

Thus, the cumulative effects of these projects in southwest Wyoming would mean a significant increase in demand for fishing areas. With this increased demand added to the existing fishing demands associated with the LaBarge project the fishing pressure exerted on waters in southwestern Wyoming would be extreme. It would seem appropriate to discuss mitigative measures associated with the cumulative fishing pressure demands of these projects with the corporations responsible for construction.

Additional comments may be provided upon completion of review by our Game Division personnel. Please forward these comments to the appropriate Federal agencies and contact this office if we may be of further help.

Sincerely,

Bruce Marker
for FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS

FP:HBM:ssc
cc: Game Div.
Fish Div.

STATE OF WYOMING
OFFICE OF THE GOVERNOR
CHEYENNE 82002

ED HERSCHLER
GOVERNOR

November 14, 1985

Mrs. Janis L. VanWhye, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, CO 80225

Dear Mrs. VanWhye:

Enclosed are some additional comments from the Wyoming Game and Fish Department regarding the draft EIS for the Bairoil/Dakota carbon dioxide projects.

Sincerely,

Paul Cleary

Paul Cleary
Natural Resource Analyst

PC:lf

Enclosure

cc: Hillary Oden w/comments

THE STATE OF WYOMING

ED HERSCHLER
GOVERNOR

Game and Fish Department

BILL MORRIS
DIRECTOR

November 13, 1985

EIS 630/L27
USDI/BLM-Riley Ridge
Bairoil/Dakota CO_2 Projects
DEIS & T&E Species.

State Planning Coordinator
Herschler Bldg.
Cheyenne, WY 82002

Attention: Mr. Paul Cleary

Dear Mr. Cleary:

The following comments are offered in addition to those included in our letter of November 8, 1985, regarding this project.

Comments in Order of Pagination of the Document:

24.42 P. 52, Housing - The DEIS notes that camping could occur along the pipeline route. We are unable to find any mention of a means to control camping by workers along the route. We suggest designation of specific sites for worker camps, and some enforceable regulations to limit impacts to wildlife and recreation.

24.43 P. 52, Pipeline Monitoring and Servicing - We see no reason for each of the three companies to monitor their own pipeline every two weeks. This could result in unnecessary harassment of wildlife, particularly on critical winter ranges. We suggest the companies coordinate monitoring so that only one flight every two weeks is necessary.

24.44 P. A4-A5, Vegetation - We are seriously concerned about the impacts of this project on wildlife habitat. No mention is made of problems in pipeline right-of-way reclamation in areas such as the sand dunes north of Rock Springs. Minimum surface disturbance is imperative. Reclamation requirements should insure soil stability and restoration of wildlife habitat values.

24.45 P.101-102, Table 38 - Several errors were noted in this table summarizing impacts to crucial wildlife habitats. Corrections are noted below. These corrections will alter totals for miles and acres impacted. Table 53 should also be corrected.

- Mule deer crucial winter range from MP 138 to 143 should be added.
- Antelope crucial winter range from MP 124 to 136, not 24 to 136. Also from MP 135 to 205 on the Bairoil spur. The Bairoil Gas Plant itself is within crucial antelope winter range.
- Elk crucial winter range from MP 114.5 to 116.5.
- Sage grouse breeding/nesting habitat from MP 69 to 71 and MP 87 to 91.
- Bald eagle winter habitat near Devils Gate on the Sweetwater River.

Headquarters: 5400 Bishop Boulevard, Cheyenne, Wyoming 82002

General Comments:

We are concerned about the impacts of this project on crucial wildlife habitat. We are particularly concerned about habitat losses on critical (crucial) big game winter ranges. It has been our policy to agree to industrial development on critical big game winter ranges only if adequate mitigation is provided.

We strongly support the single pipeline alternative, rather than two or more parallel lines. A single combined pipeline would significantly reduce wildlife habitat impacts.

As noted in our letter of November 8, 1985, recreational impacts of this project should be addressed. The cumulative effect of this project, the Exxon LaBarge Project, and others in southwest Wyoming will mean a significant increase in demand for wildlife-related recreation. We recommend these impacts be identified and mitigated.

Please forward these comments to the appropriate Federal agencies and contact this office if we may be of further help.

Sincerely,

for Douglas M. Crowe

FRANCIS PETERA
ASSISTANT DIRECTOR
OPERATIONS

FP:HBM:sac
cc: Game Div.
Fish Div.
USF&WS-Cheyenne, WY 82001

Responses to Comment Letter 24

24.1 The information you request has not been given to BLM, but it is not needed for analyzing impacts since the EIS assumed that all of the plant site would be disturbed. Amoco will provide plant site information in its Construction and Use Plan, which must be approved by BLM before the rights-of-way can be granted.

24.2 Thank you for your comment. Please see the revised Summary and the Errata Summary for changes to page 69 of the draft EIS.

24.3 About 14 to 70 tons of sulfur would be stored, based on an estimated production of 14 to 70 tons per week (page 32, left column, paragraph 4, of the draft EIS).

24.4 On the basis of Amoco's October 1985 application to the Wyoming Industrial Siting Council, the plant would not be expanded after 10 years. Please see Errata Summary for text changes to pages 52 and 53 of the draft EIS.

24.5 The information you request on the Battle Springs well field would not change the impacts analyzed in the draft EIS. Existing water rights held by Amoco would not be exceeded and the use would actually decrease. Please see right column, paragraph 6, page 97 of the draft EIS.

24.6 Additional information on the disposal site is not required for analysis in the EIS since the site is an existing, permitted site. (See item 11, page 103 of the draft EIS.)

24.7 At the time of abandonment, the companies will be required to rehabilitate the plant and pipeline sites according to the most current technology.

24.8 We apologize that the text seems unclear. Impacts to population (page 79 of the draft EIS) would be significant, whereas impacts to quality of life (page 80) may not be. Bairoil was originally built as a construction town and, as such, has experienced many changes to its social structure. Nonetheless, we agree that the small population of permanent residents might be significantly affected and have revised the text accordingly. Please see Errata Summary for change to page 80 of the draft EIS.

24.9 The Construction and Use Plan, required by the applicant for approval by BLM, will cover this type of item. In addition, workers will be encouraged to use bus service, which may alleviate some of the parking problems. (See response to comment 15.1 for related issue.)

24.10 Until a right-of-way is staked, it is not possible to accurately state that roost trees will be destroyed. Once the right-of-way is staked, a Fish and Wildlife-approved survey will be required to determine whether any adverse impacts could occur to wintering bald eagles. This recommendation is part of the Biological Assessment submitted to the Fish and Wildlife Service.

Responses to Comment Letter 24 (continued)

24.11 Page 5 summarized the conclusion drawn in the draft EIS; page 125 provided the rationale for these conclusions. Because of the existing capacity at campgrounds and the short time that workers would be camping, impacts were determined to be insignificant. However, heavy demands would be placed on certain campgrounds during construction, especially in those communities receiving the greatest population increase.

24.12 The EIS identifies various potential impacts to recreational resources from the proposed project. As stated in the draft EIS, the impact is not expected to exceed a 2-year period, with most of the impact spread throughout the entire length of the project. Although your suggestion of monitoring is good, BLM cannot require this of the companies. This type of requirement could be required as a condition of the ISA permit.

24.13 Conditions of permits such as the one quoted in this comment letter should be an effective action to reduce impacts to camping practices by the construction work force. Some BLM lands are restricted from camping, but frequently squatting is legal. Private lands could also be adversely affected by squatters; therefore, ISA's conditions should be welcomed actions.

24.14 The option was considered primarily because it would avoid the steep slopes near the base of Green Mountain, which contain sensitive soils and terrain. Although the Crooks Gap Option would add about 5 miles to the total length of the pipeline and cost the company about $1.4 million, it would not affect as much sensitive terrain as originally proposed (59 acres less).

24.15 Item 1.f refers not only to pipelines but to any right-of-way granted by BLM. BLM requires that topsoil on all its rights-of-way be removed and stockpiled.

24.16 The applicants will list these streams in their Construction and Use Plan and submit the plan to BLM for approval.

24.17 The BLM fencing requirements are outlined in BLM Handbook H-1741-1, which can be reviewed at BLM offices. The fencing designs include provisions for wildlife and are approved by the Wyoming Game and Fish Department.

24.18 The policy should be a program. The company must at least keep litter picked up and leave all sites clean. Methods for litter control must be detailed in the Construction and Use Plan, which is submitted to BLM for review and approval. See Appendix 1 for text change to page 183 of the draft EIS.

24.19 Weed control problems would be brought to the attention of the authorizing officer by specialists monitoring reclamation, company personnel, private landowners, and lessees. As stated, the company is responsible for consulting with land experts for the most appropriate weed control methods.

Responses to Comment Letter 24 (continued)

24.20 Criteria and guidelines used by specialists to monitor, determine, and certify satisfactory revegetation are identified in BLM manuals and handbooks. These guidelines include adapted species composition, vegetation productivity, and recommended seed mixture.

24.21 Generally, adapted native plant species will be used especially in riparian and critical wildlife habitat areas. The approval and use of introduced plant species for specific conditions would be in accordance with wildlife concerns and recommendations of the State Game and Fish Department.

24.22 Please see Appendix 1, item 5.10.1, Field Windbreaks for windbreak restoration in Montana. Where windbreaks are affected, landowners (usually private) can require similar measures in their easement agreements with the company. Also see Required Reclamation and Erosion Control Procedures section on Revegetation (Reseeding and Planting).

24.23 This measure was only suggested; authorization for this type of mitigation rests with the State of Wyoming, rather than BLM.

24.24 Thank you for the information; companies are required to comply with all existing federal, state, and local laws.

24.25 The significance criteria for recreation is stated on page 124 of the draft EIS. Except for the community of Bairoil, impacts would not exceed these standards. Impacts will occur, as the analysis and your comments accurately indicate.

24.26 The draft EIS states that camping in non-designated areas will result in litter and sanitation problems. The extent of these impacts could not be measured accurately. Restricted areas would be controlled as would, presumably, private lands. The applicants have indicated that buses would be operating from various communities to the construction sites, but no construction camps have been suggested. In any case, legal squatting is likely to occur to some extent.

24.27 BLM does not have the authority or jurisdiction to require cooperative mitigation measures of those sponsors whose projects could cause cumulative impacts. Nevertheless, the suggestion is a positive one and was considered in the decision-making process.

24.28 The draft EIS identified 74 miles of the proposed pipeline right-of-way in Wyoming as visually sensitive. In addition, 35 miles of the right-of-way was identified as requiring intensive reclamation and erosion control. We appreciate your listing areas considered sensitive for recreational and visual purposes. BLM jurisdiction is limited, however, to public lands. Of the locations cited in the Wyoming Recreation Commission comments, most would parallel the Rangely corridor, which would lessen impacts from the Proposed Action.

Responses to Comment Letter 24 (continued)

24.29 As preceding responses to the Wyoming Recreation Commission indicate, as does the draft EIS, impacts are mostly insignificant when measured against the Significance Criteria. The draft EIS identified those areas where impacts from increased population would last part of one or two seasons and those where the landscape would be physically disturbed. The EIS also identified areas where extra care would be needed for reclamation and erosion control. Cumulative impacts from other projects would be most severe in the community of Bairoil but even there, impacts would be short term, occurring mostly during construction.

24.30 A coordinated mitigation plan, established between the companies representing the proposed project and other interrelated projects is a good suggestion. Unfortunately, BLM has no jurisdiction to enforce such a plan. Nonetheless, your suggestion has been considered in the decision-making process. Appendix 1 of this EIS identifies the current committed mitigation.

24.31 Thank you for the suggested wording. See Appendix 1 of this EIS for changes to item 10.a (page 182 of the draft EIS).

24.32 Please see Errata Summary for corrections.

24.33 Thank you for the information. Please see Errata Summary for deletions to Tables 41 and 42.

24.34 Thank you for the information. See the Errata Summary for additions to Table 1, page 12 of the draft EIS.

24.35 Thank you for your comments. See errata changes for page 19 and Table 3 of the draft EIS.

24.36 Thank you for your comments. See errata changes to Table 1 of the draft EIS.

24.37 Please see Errata Summary for corrections to pages 94, 95, and 103 of the draft EIS. The correct numbers should have been 18 perennial streams, 22 crossing locations, and 26 actual crossings by the three companies involved.

24.38 Thank you for your comment; the appropriate changes have been made to the text and tables. Please see Errata Summary.

24.39 and 24.40 Please see Errata Summary where paragraph 5, page 104, of the draft EIS has been deleted. We hope this eliminates the confusion.

24.41 Please see Errata Summary for change to page 126 of the draft EIS.

Responses to Comment Letter 24 (concluded)

24.42 There are currently few restrictions for camping on public lands. The applicants will encourage bus transportation from certain communities, but as Table 25 indicates, some workers may choose to camp near the construction spreads. Also see related response to comment 15.1

24.43 See response to comment 17.2.

24.44 Please see Table 32 of the draft EIS, pages 86 and 87. Sandy soil areas are identified by milepost and indicated as sensitive, thereby requiring more intensive reclamation and erosion control measures. Also see Appendix 1, Required Reclamation and Erosion Control Procedures, where treatment of critical areas has been emphasized, including special mulching and reseeding practices.

24.45 The additional crucial habitat data you furnished has been added to Table 38 and Table 53 as identified in the Errata Summary.

COMMENT LETTER 26

DEPARTMENT OF THE ARMY
OMAHA DISTRICT CORPS OF ENGINEERS
6014 U.S. POST OFFICE AND COURTHOUSE
OMAHA, NEBRASKA 68102

REPLY TO ATTENTION OF

December 4, 1985

Planning Division

Ms. Janis L. VanWyhe
Bureau of Land Management
Division of EIS Services
555 Zang Street
Denver, Colorado 80228

Dear Ms. VanWyhe:

We have reviewed the draft EIS on the Bairoil/Dakota Carbon Dioxide Projects. We have also reviewed your description of methods for crossing streams and lakes with the pipeline, which was sent to us under separate cover.

Our comments on floodplains and cultural resources remain the same as those we made on the preliminary draft EIS. Our detailed comments on Corps permit requirements are provided in our enclosed comments here, based on the information you have provided us. For clarification of these permit comments, or to apply for permits, please contact our Regulatory Functions Branch at P.O. Box 5, Omaha, Nebraska 68101, or call John Morton, Chief of the Branch, at FTS 864-4133.

Thank you for this review opportunity.

Sincerely,

Richard D. Carton
Chief, Environmental Analysis Branch
Planning Division

Enclosure

130

Corps of Engineers Comments
on Corps' Permit Requirements
Bairoil/Dakota CO_2 Projects
November 1985

We have reviewed the Draft Environmental Impact Statement (DEIS), Bairoil/Dakota Carbon Dioxide Projects issued September 1985, and have the following comments regarding Department of the Army permit requirements:

a. Based on Table 36, Perennial Streams Crossed found on page 95 of the DEIS, the following streams have an annual flow of less than 5 cubic feet per second:

(1) Sheep Creek
(2) West Cottonwood Creek
(3) Middle Cottonwood Creek
(4) Meadow Creek
(5) Ranch Creek
(6) Sandstone Creek
(7) Cabin Creek

26.1

b. For the purposes of Section 404 of the Clean Water Act, any discharge of dredged or fill material in these streams will qualify for Nationwide authorization provided:

(1) That the discharge will not be located in the proximity of a public water supply intake.

(2) That the discharge will not destroy a threatened or endangered species as identified under the Endangered Species Act or destroy or adversely modify the critical habitat of such species.

(3) That the discharge will consist of suitable material free from toxic pollutants in toxic amounts.

(4) That the fill created by the discharge will be properly maintained to prevent erosion and other non-point sources of pollution.

(5) That the discharge will not occur in a component of the National Wild and Scenic River System.

c. The following streams have an annual flow rate of greater than 5 cubic feet per second:

(1) Green River (both crossings at the locality)
(2) Crooks Creek (both crossings at the locality)
(3) Sweetwater River
(4) Dry Creek

(5) Parson Spider Creek
(6) Middle Fork Casper Creek
(7) Salt Creek
(8) Little Powder River
(9) Little Beaver Creek (milepost 433.4)
(10) Little Beaver Creek (milepost 7.20)
(11) Beaver Creek
(12) Little Missouri River (milepost 510.4)
(13) Little Missouri River (milepost 587.9)
(14) Cherry Creek
(15) Lake Sakakawea

d. For the purposes of Section 404 of the Clean Water Act, any discharge of dredged or fill material in these streams will also qualify for Nationwide authorization provided:

(1) There is no change in preconstruction bottom contours (excess material must be removed to an upland disposal site).

26.1 cont.

(2) That discharge of dredged or fill material will not occur in the proximity of a public water supply intake.

(3) The activity will not jeopardize a threatened or endangered species as identified under the Endangered Species Act or destroy or adversely modify the critical habitat of such species.

(4) The activity will not significantly disrupt the movement of those species of aquatic life indigenous to the waterbody.

(5) The discharge of fill material will consist of suitable materials free from toxic pollutants in toxic amounts.

(6) The structure or fill authorized will be properly maintained.

(7) The activity will not occur in a component of the National Wild and Scenic River System.

(8) The activity will not cause an unacceptable interference with navigation.

It should be noted that this determination does not authorize the construction of causeways, work platforms, and/or diversion structures.

e. In addition to the conditions cited for the two Nationwide permits, the following management practices should be followed to the maximum extent practicable:

(1) Discharges of dredged or fill material into waters of the United States shall be avoided or minimized through the use of other practical alternatives.

(2) Discharges in spawning areas during spawning seasons shall be avoided.

(3) Discharges shall not restrict or impede the movement of aquatic species indigenous to the waters or the passage of normal or expected high flows or cause the relocation of the water (unless the primary purpose of the fill is to impound waters).

26.1 cont.

(4) If the discharge creates an impoundment of water, adverse impacts on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow shall be minimized.

(5) Discharges in wetlands areas shall be avoided.

(6) Heavy equipment working in wetlands shall be placed on mats.

(7) Discharges into breeding areas for migratory waterfowl shall be avoided.

(8) All temporary fills shall be removed in their entirety.

f. Activities that cannot be accomplished within the purview of the above Nationwide permits will require individual permits.

g. The Little Missouri River has been designated as Scenic River by the State of North Dakota, and is included in the National Park Services' Nationwide Rivers inventory. Due to the environmentally sensitive nature of the area, Regulatory Functions Branch may exercise its discretionary authority and require individual permits for the two Little Missouri River crossings.

h. Any filling of adjacent wetlands associated with the project will also require individual authorization pursuant to Section 404 of the Clean Water Act.

i. An individual permit will be required for the crossing at Lake Sakakawea.

Response to Comment Letter 26

26.1 Thank you for providing us with your permit requirements and additional information on perennial streams.

Letters Requiring No Response

COMMENT LETTER 2

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
WIND RIVER INDIAN AGENCY
FORT WASHAKIE, WYOMING 82514

IN REPLY REFER TO:
Land Operations

September 25, 1985

Ms. Janis L. VanWyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, CO 80228

Dear Ms. VanWyhe:

The Bairoil/Dakota Carbon Dioxide Projects do not affect any lands administered by the Bureau of Indian Affairs in Wyoming. The project could provide income for individual Indians who may become involved in pipeline construction or maintenance.

Please send me a copy of the Final EIS when available. Thank you for the Draft EIS and opportunity to comment.

Sincerely,

Superintendent

COMMENT LETTER 4

Ed Herschler
Governor

Wyoming State
Archives, Museums & Historical Department

Barrett Building — State Historic Preservation Office — Cheyenne, WY 82002
Robert D. Bush, Ph. D.
Director
307-777-7518

September 25, 1985

Janis VanWyhe
Bureau of Land Management
Division of EIS Services
755 Zang Street, First Floor East
Denver, Colorado 80228

RE: §Bairoil/Dakota CO_2 Projects

Dear Ms. VanWyhe:

Richard Bryant of our staff has received information concerning the aforementioned project. Thank you for giving us the opportunity to comment.

Management of cultural resources on Bureau of Land Management (BLM) lands is conducted in accordance with a memorandum of understanding between the BLM and the SHPO. The MOU calls for survey, evaluation and protection of significant historic and archeological sites prior to any disturbance. Provided the BLM follows the procedures established by the MOU, we have no objections to the project. Specific comments on the project's effect on cultural resource sites will be provided to the BLM when we review the cultural resource report.

If you have any questions please contact Mr. Bryant at 777-6292.

Sincerely,

Mark Junge
Deputy SHPO

FOR:
Dr. Robert D. Bush, Ph.D.
State Historic Preservation Officer

MGJ:RLB:klm

COMMENT LETTER 7

United States Department of the Interior

BUREAU OF MINES

[illegible]

Intermountain Field Operations Center

October 9, 1985

Memorandum

To: Janis L. VanWyhe, Project Leader, Bureau of Land Management, Division of EIS Services, 555 Zang Street, First Floor East, Denver, Colorado 80228

From: Chief, Intermountain Field Operations Center

Subject: Review of draft environmental impact statement on the Bairoil/Dakota Carbon Dioxide Projects

Personnel of the Bureau of Mines have reviewed the subject document for its treatment of mineral resources and its assessment of mineral-related impacts as a result of the proposed projects.

It appears that minerals have been given adequate consideration in the planning process; mineral resources are addressed under the various proposals and also in the Comparative Analysis section (Chapter 4). We have no objection to the document as written.

William Cochran

William Cochran

COMMENT LETTER 8

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Missouri Region
P.O. Box 2553
Billings, Montana 59103

IN REPLY REFER TO: UM-150

OCT 21 1985

Memorandum

To: Bureau of Land Management, Division of EIS Services, Denver, Colorado
Attention: James L. VanWyhe, Project Leader

From: Regional Director, Billings, Montana

Subject: Draft Environmental Statement, Bairoil/Dakota Carbon Dioxide Projects, Wyoming, Montana (DES 85/38)

The proposed projects would have no effect on projects of the Bureau of Reclamation.

Eley P. Denson

Eley P. Denson

COMMENT LETTER 10

United States Department of the Interior
BUREAU OF INDIAN AFFAIRS
ABERDEEN AREA OFFICE
115 FOURTH AVENUE S.E.
ABERDEEN, SOUTH DAKOTA 57401

IN REPLY REFER TO:
Real Property Management
Environmental Protection
Code 306

OCT 29 1985

Ms. Janis L. VanWyhe, Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, Colorado 80228

Dear Ms. VanWyhe:

This Office has reviewed the Draft Environmental Impact Statement on the Bairoil/Dakota Carbon Dioxice Projects, which was prepared by your Office. The Aberdeen Area Office of the Bureau of Indian Affairs has a negative report, since none of the project construction will affect any trust land under the jurisdiction of this Office.

The proposed location of the line and its alternatives will not affect any cultural or historic sites of religious significance to the Indian people of the Fort Berthold Indian Reservation. If there are any significant sites found in the reach between milepost 608 to 626 should be coordinated with the Agency Superintendent and Three Affiliated Tribes of the Fort Berthold Reservation.

We appreciate the opportunity to review this draft statement, and if we can be of further assistance please advise.

Sincerely,

Assistant Area Director
Indian Programs

cc: Superintendent, Fort Berthold Agency
Trust Facilitation, Washington, D. C. (Code 204)

COMMENT LETTER 22

Casper Division
Production United States

Marathon Oil Company

P.O. Box 120
Casper, Wyoming 82602
Telephone 307/235-2511

November 1, 1985

Ms. Janis L. VanWyhe
Project Leader
Bureau of Land Management
Division of EIS Services
555 Zang Street, First Floor East
Denver, Colorado 80228

Dear Ms. VanWyhe:

Re: Comments on Bairoil/Dakota
CO2 Projects Draft EIS.

The possibility of utilizing CO2 for enhanced recovery is a new and probably growing area. If the companies involved can get enough of a market to make this project economical, then oil production and enhanced recovery will be a benefit to the states and counties where it is initiated.

The document is relatively easy to read and materials are put in a concise, logical manner. This aids the reader and the decision makers in determining what the potential impacts of a specific action or alternative will be.

The most significant issues, determined by the scoping process, are socio-economics, soils and reclamation, water resources, and wildlife. The subsequent analysis and documentation reveal that the impacts to these resources will be short term and not significant. In the case of wildlife, there is the potential for habitat improvement when revegetation and reclamation occur.

One question, which arises, is what potential problems and solutions exist for the re-surveying which will occur in the Powder River Basin of Wyoming?

Thank you for the opportunity to comment.

Sincerely,

Bradley G. Penn
Land/Environmental Coordinator

BGP:mg
cc: W. H. Legg
E. M. Grant
D. S. Sailors
85-M-131

COMMENT LETTER 25

United States Department of Agriculture | Forest Service | Rocky Mountain Region | 11177 W. 8th Avenue Box 25127 Lakewood, CO 80225

Reply to: 1950

Date: NOV 18 1985

Ms. Janis Van Wyhe
BLM-Division of EIS Services
555 Zang Street
Denver, CO 80228

Dear Janis:

The proposed Bairoil/Dakota CO_2 project will not directly affect the physical environment of the Medicine Bow National Forest or Thunder Basin National Grassland since no right-of-way will cross these lands. There is a potential for increased demand for recreation use on the Forest due to the increase in population during construction. This impact will not be significant due to the duration of construction activities, the magnitude of the population increase, and the ability of the Forest to supply recreation opportunities in excess of demand. Thank you for the opportunity to provide input to this proposal.

David A. Anderson

DAVID A. ANDERSON
Director, Planning and Office of Information

cc: EC; P&OI; WO

COMMENT LETTER 27

2800

AMOCO

Amoco Production Company
Denver Region
1670 Broadway
Post Office Box 800
Denver, Colorado 80201
303-830-4040

ROW 12/06 3 YLE 1/3 OPR 3

December 30, 1985

Mr. Hillary Oden
State Director
Bureau of Land Management
Box 1828
Cheyenne, Wyoming 82003

JDC-465-986.631

Dear Hillary:

Amoco Production Company and Exxon Company have reached an agreement regarding the construction and ownership of the main CO2 trunkline proposed from Rock Springs to Bairoil. According to our agreement, Exxon will construct the CO2 trunkline from MP 26 of the existing Rangely CO2 pipeline near Rock Springs to approximately MP 112 (located about 19 mile north of the Town of Bairoil). Amoco will construct a 12-inch spur pipeline from MP 112 to the existing Bairoil fields. This agreement is consistent with BLM's preferred alternative as stated in the DEIS.

Therefore, Amoco respectfully withdraws its application for a right-of-way from MP 46.9 of the existing Rangely CO2 Pipeline to the Bairoil Junction (MP 112). However, given the uncertainty of future CO2 supplies for other potential Amoco applications in Wyoming, Amoco reserves the right to apply for a right-of-way at some future date that may require the use of a portion of this right-of-way.

Respectfully

Aaron Clark

Aaron L. Clark

cc: Dick Bastin--BLM, Rawlins
Don Sweep--BLM, Rock Springs

State of Montana Supplement
Comments and Responses

Exxon Company, U.S.A.
Comments on DEIS

STATE OF MONTANA SUPPLEMENT

PAGE	PARAGRAPH	LINE	COMMENTS
15	1 S.1	6-10	Providing a backup system would be unnecessary since the SCADA system is designed with redundancy in mind. During operation, all values received from devices monitoring flow, pressure, temperature, valve status, etc. are relative to each other. Failure of any one device would be easily detected when compared to the entire system of devices. For example, if a pressure monitoring device is showing an unusually high or low pressure it can be checked (by the controller) for malfunction simply by comparing its reading with that from the pressure monitors upstream and downstream from the one in question. The SCADA system is also powered by batteries which are continually being charged by commercial power. The system is designed to provide 8 hours of operation after the loss of commercial power. Any loss of A.C. power will sound an alarm at the Shute Creek Plant, the controller will then have eight hours to send out technicians to correct any problems or he can elect to have the system shut down.
22	2 S.2	1	(See above comment on backup SCADA System.) A moisture monitor was installed at the Shute Creek meter station. If the moisture content reaches an unsafe level, the monitor will sound an alarm and the controller can have the system shut down until the problem is corrected. Also, corrosion coupons will be installed and checked periodically to monitor corrosion. The corrosion coupons will serve as an early warning indicator of internal corrosion.
22	3 S.3	5	The location of crack arrestors is a matter of design. The engineering methods used in determining whether or not they are needed, and where they should be located, are based on sound engineering principles, prior materials testing and include conservative safety factors.
22	5 S.4	2	We take exception to the statement "Because ruptures are most likely to occur at weld points". On the contrary, Richard Beam with the DOT Office of Pipeline Safety reports that weld failures are the least likely cause of ruptures. A 1982 report on liquid pipelines from the ASME B31.4 Committee showed that from 1920 through 1981 there were only 49 girth weld failures out of an estimated 33 million welds. The DOT 1984 Annual Report on Pipeline Safety shows that defective welds accounted for only 2.46% of all liquid pipeline accidents in 1984. The report also states "Damage by outside forces or third party damage remains the leading cause of system failure."
22	5 S.5	5	The potential for corrosion from the formation of carbonic acid will be slight since the moisture content will be monitored at the inlet to the system. The moisture monitor will send an alarm if moisture content reaches an unsafe level.
23	2 S.6	1	All welders will be qualified under either ASME Section IX or API Standard 1104. Once a specific certification procedure is developed it will be submitted to the Montana DNRC. We have found in the past that a welder's previous experience has little effect on the quality of his welds. Welder certification followed by x-ray testing has proven to be the best method for obtaining quality welds.
38	Table A-1 S.7		These tax revenues are significantly different from those in the DEIS (pp. 76 & 78, Tables 26 & 28). These differences should be explained.

	PAGE	PARAGRAPH	LINE	COMMENTS
S.8	49	FA-467	-	Typographical errors, replace "Exxon Pipeline Company" with "Shell".
S.9	52	1	1	Shouldn't the description of the boggy site be (NW-1/4 NW-1/4)?

Response to Comment Letter S

S.1 and S.2 This new information precludes the need for the "Monitoring" recommendation on page 22 of the supplemental draft EIS.

S.3 The comment does not provide specific information on engineering principles, materials testing, or safety factors that would be necessary to determine if the "Crack Arrestors" recommendation in the supplemental draft EIS is too restrictive (or too lax). The recommendation represents a conservative, common-sense approach to pipeline safety when uncertainty exists. The recommendation can be modified as design information is provided and changes are justified, but for the present, the recommendation appears valid, as modified in the Errata Summary.

S.4 The statement regarding ruptures was intended to emphasize the potential for failure along a completed pipeline, not considering outside forces. DNRC clearly recognizes that the majority of pipeline ruptures are due to outside forces as noted by BLM and Exxon. However, the high pressure and potential for corrosion on this facility demands extraordinary attention to weld inspection by a qualified third party.

S.5 Thank you for your comment; it has been considered in the decision-making process.

S.6 Discussions with welding instructors and pipeline experts support DNRC emphasis on considering a welder's experience. We've been told that there is no substitute for welding experience to ensure consistent success in passing a destructive weld test for thick-walled pipe.

S.7 Table A-1 pertains to the tax benefits resulting from increased crude oil production. The tables on page 76 and 78 of the draft EIS pertain to property tax revenues resulting from the development of major CO_2 pipelines.

S.8 Thank you for your comment. Please see Errata Summary for change to page 49 of the Montana Supplement.

S.9 Please see Errata Summary for change to page 52 of the Montana Supplement.

STATE OF MONTANA SUPPLEMENT

MONTANA SUPPLEMENT INFORMAL COMMENTS

Commenter: Montana Department of Highways

Comment: The following stipulations should be included in the final EIS:

1. The pushing or boring construction option will be required for roadway crossings, although open trenching may be allowed at the discretion of the responsible agency.

2. If the open trench construction option across roadways is allowed, the contracting company will wet backfill materials when compacting backfill in the trench. All costs associated with open trench construction, such as signing, flagging, inspection, and all detour costs, will be at the sole expense of the applicant or its contractors.

3. Backfilled trenches will be regularly inspected for fill settling and roadway surfaces will be rehabilitated over a two-year period at the expense of the applicant or its contractors.

4. Roadway maintenance costs above those scheduled by the responsible agency, which are attributable to accelerated deterioration of roadway surfaces during the construction phase of the project, will be reimbursed by the company. Any portion of state highways used for haul road purposes during construction of the project will be maintained by the project contractor.

5. Any road or lane closure of state highways to accommodate project activities will be required to have the prior approval of the Montana Department of Highways (MDOH). The applicant or its contractors will be required to reimburse MDOH costs associated with project related road closures or travelled lane closures.

Response: Thank you for your comments. The stipulations are included in this final EIS: Appendix 1, Other Measures that Montana State or Local Agencies May Require.

Commenter: Shell Pipe Line Corporation

Comment: Page 28, last paragraph: Shell has not yet committed itself to the estimated $13 million investment required to construct the 65 mile main CO_2 distribution pipeline.

Response: The $13 million referred to in this paragraph is the money Shell is investing in determining the technical and economic feasibility of CO_2 enhanced oil recovery in the Cedar Creek Anticline. It is coincidental that Shell's main CO_2 distribution line also is expected to cost $13 million.

APPENDICES

APPENDIX 1
PROVISIONS AND MEASURES
DESIGNED TO REDUCE ENVIRONMENTAL IMPACTS

Page

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PROVISIONS AND MEASURES

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT

Required General Resource Measures

As a condition for granting rights-of-way and permits, the authorizing agencies require that certain terms and conditions be met. The general federal resource measures as presented here will be incorporated into the applicants' plans of operations. (State and local governments and private landowners may wish to consider these measures for use on their own lands.) As project plans are completed and before they are authorized, the authorizing agencies will add specific requirements.

1. Soils and Vegetation

    a. Existing soils and geological data will be gathered by the company and used to achieve maximum revegetation and minimum soil erosion.

    b. Pipeline construction is subject to suspension during the wet season. Construction schedules will be approved by the authorized officer.

    c. Where practical, pipeline construction will avoid areas subject to mudflows, landslides, mudslides, avalanches, rock falls, and other types of mass movement. Where avoidance is not practical, the design, based on detailed field investigations and analyses, will provide measures to prevent accelerated mass movement. A full-scale engineering diagram and staking must be completed in these locations. If a slide occurs, damages will be repaired as the responsibility of the company. The company will submit a plan for such restoration to the authorized officer for approval.

    d. Brush- and tree-covered areas will be precleared before dozer and maintenance blade work. During preclearing, brush and trees will be cut and removed to a designated area.

    e. Applicants will comply with regulations and procedures as required by the Bureau of Land Management (BLM), states, and local weed and pest control districts.

    f. Topsoil will not be stripped from the general construction right-of-way but will be stripped from areas requiring excavation for level working surface, such as sideslopes and creek crossings. All excavated topsoil will be protected to reduce potential mixing with subsoil.

2. Agriculture

    a. To prevent interference with livestock trailing, construction will be coordinated between the company, livestock operators, and the authorized officer.

    b. Gaps (no less than 50 feet) will be left between adjacent lengths of pipe at suitable intervals and at well-defined trails to permit livestock and vehicles to pass during the time between stringing and other construction operations.

3. Transportation Networks

   a. The pipeline rights-of-way will be used as access roads only when needed during construction and only during emergencies after completion. Uses will be only as approved by the authorized officer. To avoid compaction, off-road or off-route travel through vegetation will be controlled when the soil is wet.

   b. The company will control off-road vehicle use on rights-of-way. Specified control could include physical barriers, replanting of trees, or other reasonable means.

   c. The company will not lock or close gates or cattle guards on established roads on public land unless the gates or cattle guards were originally locked or closed.

   d. The company will comply with existing federal, state, county, and private requirements developed for protecting all facilities. Load limit restrictions will vary from state to state, with each type of roadway and the time of the year. These restrictions could limit the hauling of heavy loads on specific roadways during specified times.

4. Water Resources

   a. When rivers, streams, and washes need to be crossed for access to project facilities, existing roads or bridges will be used unless an alternative is designated by the authorized officer. Culverts, bridges, or rock fords will be installed where new permanent access roads cross live streams to allow fish unobstructed passage. Where temporary roads cross drainages (ephemeral streams) or dirt fills, culverts or rock crossings will be installed during construction and removed after the project is completed. Any construction in a perennial stream is prohibited unless specifically allowed by the authorized officer. All stream channels and washes will be returned to their natural states.

   b. Construction equipment will be refueled and maintained outside of stream channels, in areas designated by the authorized officer.

   c. Water used for hydrotesting will be obtained and disposed of in accordance with applicable regulations. Permits for acquisition and disposal will be obtained from the agency or agencies of jurisdiction.

5. Wildlife

   a. Pipeline crossings through perennial streams that support naturally spawning game fish will be timed so in-stream construction does not occur during the spring and fall spawning and incubating periods. To protect rainbow trout, no in-stream construction will be allowed from April 1 to June 30. To protect brown and brook trout, no in-stream construction will be allowed from October 1 to December 31. Any exceptions must be approved by the authorized officer.

b. Before building any project element, the company will allocate enough funds and time to perform Fish and Wildlife Service-approved inventories for any listed threatened or endangered species. (To the extent allowed by law, this measure will apply to all lands, regardless of ownership.) If listed species or their habitats could be present and could be affected by the proposal, the federal authorizing agency will consult with the Fish and Wildlife Service. No activities will be authorized until consultation is complete as specified by Section 7(c) of the Endangered Species Act. The Biological Opinion, issued by the Fish and Wildlife Service as a result of consultation, will detail the mitigation measures to be carried out by the company.

c. The company will comply with existing county, state, and federal laws to protect and preserve wild (feral) horses and burros, raptors, and game and nongame animals.

d. To protect big game winter range and prevent wildlife harassment during critical winter and calving/fawning periods, construction will be allowed only from April 1 to December 15 on winter ranges and from July 1 to May 1 on calving/fawning habitat. This limitation does not apply to right-of-way maintenance and operation. Any exceptions to the requirement must be obtained in writing from the authorized officer.

e. No construction, disturbing activities, or building of permanent facilities will be permitted within the prescribed distance or during the breeding/nesting period of the following (to the extent allowed by law, these will apply to all lands, regardless of ownership):

Raptor	Distance	Dates
Bald Eagle	1.2 miles	March 1 - July 15
Golden Eagle	0.6 mile	March 1 - July 15
Red-Tailed Hawk	0.3 mile	April 1 - July 15
Swainson's Hawk	0.6 mile	April 1 - July 15
Ferruginous Hawk	1.2 miles	April 1 - July 15
Goshawk	0.6 mile	April 1 - July 15
Prairie Falcon	0.6 mile	April 1 - July 15
Cooper's Hawk	0.6 mile	April 1 - July 15
Merlin	0.6 mile	May 1 - August 15
Harrier	0.6 mile	April 1 - July 15
Burrowing Owl	0.6 mile	April 15 - July 15
Long-Eared Owl	0.5 mile	April 1 - July 1

Changes to any of these limitations may be approved in writing by the authorized officer in consultation with State Fish and Wildlife Management agencies and the Fish and Wildlife Service.

f. Active raptor nests near the pipeline will be located according to the techniques and timing detailed in "Nesting Habitats and Surveying Techniques for Common Western Raptors" (Call 1978). (To the extent allowed by law, this measure will apply to all lands, regardless of ownership.)

g. Pole type designs for transmission lines on all land ownership will be raptor-safe according to "Suggested Practices for Raptor Protection on Powerlines for Power Transmission Lines" (Olendorff 1981).

h. No occupancy or other surface disturbance will be allowed within 2 miles of the center of a sage grouse strutting ground (lek), from March 1 through June 30, unless permitted by the authorized officer. (To the extent allowed by law, this measure will apply to all lands, regardless of ownership.)

No occupancy or other surface disturbances will be allowed within 2 miles of the center of a sharp-tailed grouse dancing ground, from March 15 through July 1, unless permitted by the authorized officer.

i. Active grouse leks near the pipeline will be located according to techniques detailed in BLM Manual, Section 6600, Wildlife (Specifically, Section 6601-3, Species Life History and Habitat Requirements--Sage Grouse). (To the extent allowed by law, this measure will apply to all lands, regardless of ownership.)

j. Prairie dog colonies on the proposed route will be surveyed for black-footed ferrets, using Fish and Wildlife Service-approved techniques before final engineering plans are completed. If black-footed ferrets are present, the company will consult with the Fish and Wildlife Service; Wyoming Game and Fish Department; Montana Department of Fish, Wildlife, and Parks; North Dakota Game and Fish Department; and any BLM District, as appropriate, before proceeding.

k. In the event of a CO_2 leak, if fish are killed in a river, stream, or lake, the company will work with state game and fish agencies to determine the value of the fish killed and reimburse the agency for that amount.

l. In order to reduce impacts on riparian vegetation, the authorized officer may require the company to maintain structural diversity and quickly recover overstory at stream crossings; mature shrubs encountered on the right-of-way in riparian zones should be removed with a backhoe or loader, retaining as much of the root mass as possible. The roots should then be reset in similar sites adjacent to the right-of-way or replaced on the edge of the right-of-way in adequate excavations as soon as possible after removal. This would not apply to shrubs such as sagebrush, greasewood, or snowberry, but

would apply to willow (Salix spp.); waterbirch (Betula occidentalis); chokecherry (Prunus spp.); Hawthorne (Crateagus spp.); Rocky Mountain Maple (Acer glabrum); Cottonwoods or Aspen (Populus spp.), less than 4 inches in diameter at breast height (about 54 inches high); and similar species encountered in riparian zones.

6. Cultural Resources

As the lead agency for the project, BLM negotiated a Memorandum of Agreement (MOA) with the Advisory Council on Historic Preservation and State Historic Preservation Officers for Wyoming, Montana, and North Dakota (Appendix 4). This MOA specifies procedures required for identifying, evaluating, and treating significant cultural resources that may be affected by the projects. BLM and appropriate surface management agencies will ensure that stipulations specified in the MOA are implemented as conditions to the federal compliance with Sections 106 and 110 of the National Historic Preservation Act (16 U.S.C. 470) and its implementing regulations (36 CFR 800).

7. Paleontology

The company will provide a qualified, professional paleontologist, subject to approval by the authorized officer. The paleontologist will intensively survey all formations along the route that are regarded as sensitive by the authorized officer. Surveys will be completed on the identified areas before construction begins.

The applicant will submit a report of paleontological investigation to the authorized officer, detailing the results of the survey and recommending means for avoiding or mitigating any significant paleontological deposits that may be affected by the projects. The authorized officer will review the report and make final decisions regarding treatment of paleontological resources. The applicant will implement the required mitigation measures before construction begins.

The holder of this authorization shall immediately bring any paleontological resources or fossils, discovered as a result of operations under this authorization, to the attention of the authorized officer. The holder shall suspend all activities near the discovery until notified to proceed by the authorized officer. The authorized officer will evaluate, or will have evaluated, such discoveries no later than 5 working days after being notified and will determine the action that should be taken. The authorized officer, in consultation with the company, will decide on appropriate measures to mitigate adverse effects to significant paleontological resources. The company may be responsible for the cost of any necessary investigations and for any mitigation measures.

8. Air Quality

Where the pipeline crossed or paralleled public highways, major access roads and cleared pipeline rights-of-way will be watered or other approved dust abatement procedures used to maintain air quality, prevent severe wind erosion, and provide safety.

9. Visual Resources

All aboveground structures not subject to or otherwise conflicting with safety requirements will be painted by the company to blend with the natural landscape. The paint used will be a color or colors that simulate "standard environmental colors" designated by the Rocky Mountain Five-State Interagency Committee (Wyoming 1982). The color(s) selected for this project, including name and Munsell Soil Color Number, will be included in the Construction and Use Plan.

10. Land Uses

a. Construction and right-of-way maintenance will disturb to the least possible extent such improvements as fences, roads, and watering facilities (including ditches and pipelines). If improvements are damaged, the company will immediately restore them to at least their former condition. Functional use of these improvements must be maintained at all times.

b. If a natural barrier used for livestock control is broken during construction, the company will adequately fence the area to prevent livestock drift. In pronghorn ranges, the fence will be built to allow pronghorn to pass. Fence specifications will be determined on a case-by-case basis.

c. All fencing built by the company will meet BLM requirements.

11. Waste Disposal

a. Construction sites will be maintained in a sanitary condition at all times; waste will be disposed of promptly at an authorized site. "Waste" means all discarded matter, including human waste, trash, garbage, refuse, oil drums, petroleum products, construction materials, ashes, and equipment.

b. A litter policing program will be developed by the applicant as part of the Construction and Use Plan, approved by the authorized officer, and followed on all project roads and sites.

c. Oil waste, toxic materials, and solid or liquid wastes will be dumped only in authorized waste disposal sites. No burying of debris or waste materials will be allowed, except as specified by the authorized officer.

12. Miscellaneous

a. An on-site prework conference will be held before any construction begins. This conference will be attended by at least an authorized representative of the company, the dirt contractor, and the authorized BLM officer. The company will schedule and hold this meeting early enough to resolve any potential problems.

b. The company will notify BLM of the starting date for construction, before any earth disturbance and, preferably, at the prework conference.

c. The company will do everything reasonably within its power and will require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon request of BLM, to prevent and suppress fires on or near the lands to be occupied under this permit.

d. When all development and rehabilitation have been completed, a joint check of the right-of-way will be made by the company and the authorized officer or designated representative to determine compliance with the terms and conditions of the grant. The company will perform, at its own expense, any required changes or additional reclamation work needed to comply with the terms of the grant.

e. The company will submit an "as built" survey map to the authorized officer within 60 days after construction is completed.

f. Before beginning pipeline operations, the company will submit a certification of construction to the authorized officer, verifying that the pipeline system has been built and tested in accordance with the terms of the right-of-way grant and in compliance with the required plans and specifications and applicable federal and state laws and regulations.

g. If the authorized officer finds a weed-control problem, the company will be responsible for weed control on disturbed areas within the exterior limits of the grant. The company is responsible for consulting with local county weed and pest supervisors for the most appropriate weed control methods. Application of herbicides is subject to annual review and permitting procedures and may require additional environmental documentation.

h. The company will comply with applicable federal and state laws and regulations concerning the use of pesticides (insecticides, herbicides, fungicides, rodenticides, or other similar substances) in all activities or operations under this grant. The company will obtain approval of a written plan from the authorized officer before pesticides are used. The plan must identify the type and amount of material to be used, the pest to be controlled, the method of application, the location for storage and disposal of containers, and other information that the authorized officer may require. The plan will be submitted no later than December 1 of the year before the year for which treatment is proposed (December 1, 1983 deadline for a 1984 treatment). If need for emergency use of pesticides is identified, the use must be approved by the authorized officer. Substances applied on or near the right-of-way will be used in accordance with the approved plan and only in accordance with its registered uses and any limitations imposed by the Secretary of the Interior. Pesticides will not be permanently stored on public lands authorized for use under this grant.

BUREAU OF LAND MANAGEMENT

Required Reclamation and Erosion Control Procedures

The company has agreed to follow the identified procedures on all federal, state, and private lands as appropriate and agreed to by the landowner. (The following procedures will be incorporated as stipulations in any federal right-of-way grant that may be issued and will be used by the company to develop their Construction and Use Plan. These procedures will be applied during construction, operation, and abandonment of the project.)

1. The company will comply with the erosion control and reclamation programs it has developed and will follow through on its commitment to comply with appropriate regulations and required plans and stipulations that would protect and restore any land disturbed by project construction and operation to a stable, productive, and aesthetically acceptable condition.

2. The company will develop a detailed, site-specific reclamation plan as part of its CU Plan. Because the proposed rights-of-way would cross many types of terrain, soils, vegetation, land uses, and climatic conditions, the detailed plan will include sets of techniques and measures tailored to each condition found. Local expertise and locally effective reclamation methods will be followed when the specific procedures for the detailed reclamation plan are developed. The erosion control, revegetation, and restoration guidelines and Construction and Use Plan will be implemented under the direction of the authorized officer.

3. Details on applicable techniques of erosion control and reclamation to technically assist private landowners will be obtained as required by the private landowner from local Soil Conservation Service districts. Technical assistance and approval of written plans for federal lands will be obtained from BLM before any construction.

4. During project construction, the company will employ an on-site reclamation specialist to provide (a) liaison with private landowners, federal agency officials, and local governments; (b) expertise for directing restoration procedures when special conditions are found, without causing construction delays; and (c) favorable public relations.

5. General erosion control and restoration measures have been developed for the following areas:

   - Right-of-way and Site Clearing
   - Trenching and Preservation of Topsoil
   - Backfilling and Grading
   - Land Preparation for Seeding and Cultivation
   - Revegetation (Reseeding and Planting)
   - Maintenance and Monitoring
   - Use of Biochemicals

6. On public land, a standard 80-foot-wide construction right-of-way will be granted. A wider right-of-way will be granted where needed and approved by the authorized officer only after project plans are completed and on a case-by-case basis.

Right-of-Way and Site Clearing

Emphasis will be placed on protecting existing vegetation and minimizing disturbance of the existing environment.

- Land will be graded only on the area required for construction.

- Sidehill cuts, approved in the Construction and Use Plan, will be kept to a minimum to ensure resource protection and a safe and stable plane for efficient equipment use. The authorizing agency will provide assistance as needed.

- Existing ground cover, such as grasses, leaves, roots, brush, and tree trimmings, will be cleared and piled only to the extent necessary. Slash will be piled and later shredded and chipped for use in restoration operations or disposed of at the discretion of the authorized officer.

- Trees and shrubs that are not to be cleared from the right-of-way will be protected from damage during construction.

- Where the right-of-way crosses streams and other water bodies, banks will be stabilized to prevent erosion. Construction techniques will be designed to minimize damage to shorelines, recreational areas, and fish and wildlife habitat.

- A buffer strip of terrestrial vegetation above the high water line will be left between work staging areas next to the stream and the stream itself.

- Care will be taken to avoid polluting all areas, including streams and other water bodies and their immediate drainage areas. Spills will be cleaned up as required by the authorized officer or landowner.

- Design and construction of all temporary roads will be based on an approved transportation plan and will ensure proper drainage, minimize soil erosion, and preserve topsoil. After abandonment, these roads will be closed and the areas restored without unnecessary delay or maintained at the discretion of the landowners. Restoration, including redistribution of topsoil, will be to the satisfaction of the landowner, regulatory officials, or both.

- During wet and muddy conditions, as determined by the on-site reclamation specialist, the authorized officer will issue stop and start orders to prevent rutting or excessive tracking of soil and deterioration of vegetation in the right-of-way.

- During construction near streams or lakes, sedimentation (detention) basins, straw bale filters, or both will be built to prevent suspended sediments from reaching downstream watercourses or lakes, as required by the authorized officer.

- Construction will immediately follow clearing, especially where soils are highly susceptible to wind or water erosion and in other special areas.

Trenching and Preservation of Topsoil

To help complete project site reclamation, surface soil and favorable plant growth material will be removed from disturbed land within the project area as necessary. (See Glossary in the draft EIS for definitions.) Stockpiles will be mulched as needed and seeded to reduce wind and water erosion. Trenching methods and techniques will ensure the following:

- Topsoil will be removed from the trench area by double-ditching or other company approved methods approved by the authorized officer. Topsoil needs to be windrowed separately, protected, and replaced last during backfilling.

- Remaining unearthed materials will be removed and stored to facilitate backfilling. The materials will be stored in the smallest right-of-way area possible protected from vehicle and equipment traffic.

- Cofferdams or other diversionary techniques will be used where needed to permit flow in one part of a stream while pipe is being laid in another.

- A specific trenching and excavated material stockpiling procedure will be used on steep-sloping and rough, broken terrain to ensure the least disturbance, as outlined in the Construction and Use Plan. This procedure will be developed by both the authorized officer and the company.

Backfilling and Grading

- Backfill will be replaced in a sequence and density similar to the preconstruction soil condition.

- Areas will be backfilled in a manner that will reduce further vegetation disturbance.

- The ground contour will be restored to permit normal surface drainage.

- In steeply sloping and steep terrain, erosion control structures such as water bars, diversion channels, and terraces will be built to divert water from the pipeline trench and reduce soil erosion along the right-of-way and adjoining areas disturbed during construction. All water bars will extend at least 5 feet beyond the disturbed area.

- All structures such as terraces, levees, underground drainage systems, irrigation pipelines, and canals will be restored to preconstruction conditions so that they function as originally intended.

- The surface will be graded to conform to the existing surface of the adjoining areas except for a slight crown over the trench to compensate for natural subsidence. In cropland areas, especially border-and furrow-irrigated cropland, the soils (backfill) within the trench will be compacted and the crown smoothed to match the bordering area and allow surface irrigation.

- Topsoil will be uniformly replaced over the trench fill and other disturbed areas to restore productivity to preconstruction conditions.

- Materials unsuitable for backfilling or excess backfill material will be disposed of as arranged by the authorized officer.

- Temporary work space or staging areas used at stream and highway crossings and at other special sites will be restored to near-preconstruction conditions and to the satisfaction of the authorized officer.

- The rights-of-way at stream crossings will be restored as nearly as possible to preconstruction conditions soon after construction is completed. The upland areas and banks will be revegetated to preconstruction conditions; where such revegetation is not possible, the areas will be mulched with rock that is larger in diameter than materials excavated from the trench. The streambed will be returned to its original contours with sediments similar to those excavated and as approved by the authorized officer. All drainages crossed by the pipeline will be kept free of vegetative debris, and channels will be reopened following construction.

- For rights-of-way through steep terrain or wet areas, land must be graded at two elevations (two-toning), diversion dams built, or other company-proposed methods used to facilitate construction, as approved by the authorized officer. The areas will be contoured upon completion of construction and made to resemble the original grade as nearly as possible, as agreed to by the authorizing officer in consultation with the company.

Land Preparation for Seeding and Cultivation

Construction, backfilling, and grading commonly cause compaction and later soil conditions that could affect soil productivity, seeding success, or both in the right-of-way. The following practices will be used to improve these soil conditions, protect soil from erosion, and provide a favorable seedbed:

- As required by the authorizing agency or landowner, subsoiling or chiseling will be used in cropland to ensure that soil compaction is reduced and preconstruction soil permeability restored.

- Chiseling will be used in rangeland to reduce compaction and improve soil permeability unless the landowner or authorizing agency objects. Pitting the contour furrowing, as directed by the authorizing agency or landowner, will be done on disturbed areas with steeper slopes to increase infiltration and to reduce runoff and erosion.

- Suitable mulches and other soil stabilizing practices will be used on all regraded and topsoiled areas identified by the authorized officer to protect unvegetated soil from wind and water erosion and to improve water absorption. Areas and types of mulches will be identified by the company in the Construction and Use Plan and approved by the authorized officer.

- Special mulching practices or matting will be needed to protect seeding, seedlings after germination, and plantings in critical areas where wind and water are serious erosion hazards.

- Commercial fertilizers will be applied to soil areas with low inherent fertility and where woody materials are chipped and used as mulch, to maintain crop yields and establish grass seedings. Application rates will be depend on annual precipitation and available irrigation water. The company will identify areas needing commercial fertilizers in its Construction and Use Plan.

- Seedbeds for areas seeded to grass will be prepared so that they will provide a suitable condition for establishing grass stands.

- Rock mulches may be used as determined in the Construction and Use Plan in steep-sloping, rock outcrop areas and low precipitation areas to reduce erosion and promote vegetation growth.

- Cultivation and land preparation operations will be conducted on the contour on steeply sloping areas to reduce erosion.

- Soil with rock fragments such as very coarse gravel, cobble, or stone scattered on the surface will be restored to the original preconstruction surface condition to blend with the adjoining area, to avoid a smooth surface right-of-way, and to control accelerated erosion.

Revegetation (Reseeding and Planting)

As soon after disturbance as possible, areas will be reshaped and revegetated to nearly original condition or to a condition agreed upon by both the company and the authorized officer. Revegetation efforts will continue until a satisfactory vegetation cover is established. The following practices and techniques will be used where reseeding is suitable, as determined by the authorizing agency:

- A firm seedbed will be prepared before seeding and will include plant residues present in the topsoil or other suitable materials needed for mulch. A cover crop may be needed in larger disturbed areas.

- Seed will be planted by drilling, broadcasting, or hydroseeding. Wherever possible, seeds will be planted by drill. Drill seeding with a grass drill equipped with depth bands will be used where topography and soil conditions allow, to meet the seeding requirements of the species being planted. Broadcast seeding will be used in inaccessible or small areas. Seed will be covered by raking or harrowing. Critical areas will be hydroseeded as determined by the reclamation specialist or authorized officer.

- Only species and species varieties adaptable to local soil and climatic conditions, generally native species, will be used, but introduced species may be considered for specific conditions when approved by the landowner and regulatory authority. Seeding rates in critical areas will be increased by 100 percent or more over regular seeding rates to compensate for seed mortality from adverse growing conditions.

- Seeds will be tested to meet federal, state, and agency requirements.

- Areas will be seeded when seasonal or weather conditions are most favorable and as determined by the landowner or authorized officer.

- Grazing or mowing will be delayed at least one season after seeding, especially in highly erodible areas, to provide time for vegetation to become established, unless otherwise agreed upon by the landowner or lessee and the authorized officer. Protective fencing may be needed in special areas as agreed upon and will be built, maintained, and removed according to authorizing agency or landowner specifications.

- In areas with low annual precipitation (generally less than 8 to 10 inches), erosion control structures and measures will be applied on sloping areas to reduce accelerated erosion and to allow reestablishment of preconstruction surface soil conditions and natural revegetation.

- Trees and shrubs will be reestablished in areas as specified in the revegetation plan. Temporary or permanent structures or both will be installed by the company at specific locations along the right-of-way and at other disturbed sites to prevent off-road vehicle access.

Maintenance and Monitoring

The applicant and authorized officer will jointly inspect the reclaimed areas to monitor the success and maintenance of erosion control measures and revegetation programs on native grazing land for a period determined by the landowner on private land or the authorized officer on state or federal land. The monitoring program will identify problem areas and corrective measures needed to ensure cover and erosion control. Successful revegetation and erosion control will be certified by the landowner or authorized officer.

FOREST SERVICE

Use of Biochemicals

Biochemicals such as herbicides, fungicides, and fertilizers will be applied by ground rather than aerial methods, in compliance with state and federal laws, regulations, and policies regarding the use of poisonous, hazardous, or persistent substances. State and federal wildlife agencies will be contacted if any of these substances will be applied on or near sensitive wildlife areas.

Before these substances are used on or near the permit or grant area, the company will obtain approval of a written plan for such use from the authorized officer, landowner, or appropriate wildlife agency. The plan will outline the kind of chemical, method of application, purpose of application, and other information as required, and will be considered as the authorized procedure for all applications until revoked by the authorized officer, landowner, or appropriate wildlife agency. This plan will become part of the Construction and Use Plan.

U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, LITTLE MISSOURI NATIONAL GRASSLAND

General Measures

The specifications are included as a basis for controlling construction and rehabilitation, operation, and maintenance of the pipeline right-of-way. These controls are within the constraints of the Multiple Use Plan for the Badlands Planning Unit and Rolling Prairie Units, Custer National Forest.

1. Pipeline right-of-way widths for construction shall be limited to 75 feet. Center line location will be designated and approved by the District Ranger of the Forest Service at either Dickinson or Watford, North Dakota. Right-of-way width for operation and maintenance shall be limited to 20 feet.

2. An on-site prework conference shall be held prior to any earth-disturbing activities. This shall include, at a minimum, the permittees/operators or their authorized representative, the dirt contractor, and the authorized Forest Service officer. The permittee/operator is responsible for scheduling and holding this meeting in a timely manner sufficient for resolving any potential problems prior to actual construction.

3. The Forest Service District Ranger shall be notified of the starting date for construction prior to any earth-disturbing activities. Preferably this should be determined at the prework conference.

4. All pipeline construction activities are subject to immediate suspension during periods of wet weather. The normal wet season in this area is from March 1 to June 1. No construction will be allowed between these dates without the District Ranger's approval.

During below-freezing weather, when the topsoil and subsoil are frozen solid, all pipeline construction activities will be suspended immediately unless approval to proceed has been granted by the District Ranger.

5. Non-ferrous pipe that is not encased must have an electrically conductive wire or other means of locating the pipe while it is underground.

6. Related facilities such as pumping stations, compressor stations, and compressor sites will be fenced to Forest Service standards.

7. Outdoor lighting fixtures will be allowed on facilities but may only be used when personnel are present on location.

8. Topsoil shall not be stripped from the general construction right-of-way. Topsoil shall be stripped from areas requiring excavation for level working surface such as side slopes and creek crossings. All excavated topsoil shall be protected to reduce potential mixing with subsoil material.

9. Depth of backfill from surface to the top of the pipe shall be no less than 4 feet. Backfill is to be compacted in 1-foot lifts.

10. Pass-throughs to allow cattle access to either side of right-of-way will be provided at a minimum as follows:

    Two per mile near stock tanks or dams.

    One per mile in open range country.

11. Pesticides or herbicides may not be used to control undesirable woody and herbaceous vegetation, aquatic plants, insects, rodents, etc., without prior written approval of the Forest Service District Ranger. A request for approval of planned uses of pesticides will be submitted annually by the permittee/operator on the due date established by the Forest Supervisor. The report will cover a 12-month period of planned use beginning 3 months after the reporting date. Information essential for review will be provided in the form specified. Exceptions to this schedule may be allowed, subject to emergency request and approval, only when unexpected outbreaks of pests require control measures that were not anticipated at the time an annual report was submitted.

    Only those materials registered by the U.S. Environmental Protection Agency for the specific purpose planned will be considered for use on National Forest System lands. Label instructions will be strictly followed in the application of pesticides and disposal of excess materials and containers.

12. When construction or maintenance of pipelines or related facilities occurs within an existing road right-of-way, it is the permittee/operator's responsibility to obtain prior written permission from the holder of any easement, project work agreement, special use permit, or encroachment permit of the affected portion of the road. Following construction or maintenance activities, the permittee/operator shall return the roadway to its original condition, including compacting, seeding, and surfacing, if necessary. The permittee/operator is also responsible for any future road reconstruction or maintenance needs resulting from this activity, such as compaction necessitated by pipeline settling, unless released from this liability by the holder of the applicable easement, project work agreement, special use permit, or encroachment permit.

13. Cleanup of rights-of-way shall consist of restoring the entire length to as near-original condition as possible. All slopes and contours will be shaped and smoothed to near-original contour.

14. Stockpiled topsoil will be replaced and evenly spread over exposed subsoil to the extent practicable.

15. Revegetation on all favorable sites or on areas where ground cover was destroyed during construction will consist of the following mixture:

Species	Pounds/Acre (Pure Live Seed)
McKenzie Ranger District	
Streambank wheatgrass	8
Pubescent wheatgrass	10
Standard crested wheatgrass	5
Oats or rye (cover crop)	20
Medora Ranger District	
Streambank wheatgrass	8.4
Pubescent wheatgrass	9.7
Standard crested wheatgrass (Agropyron desertorum)	5.0
Sheep fescue (Festuca ovinsa)	1.0
Sand dropseed (Sporobolus cryptandrus)	0.5

16. Seed mixture shall be certified. A certified copy shall be supplied to Forest Service prior to planting.

PROVISIONS AND MEASURES

17. Seeding or planting will be done between April 1 and May 15 or October 1 and November 15 in a manner which the District Ranger considers to have the best chance of success and will be repeated annually until such areas are accepted, in writing by the District Ranger, as satisfactorily revegetated and stabilized. Shrubs and trees will be planted as early as possible in the spring.

    Replaced topsoil should be evenly spread over the area to be seeded. The seed bed should be thoroughly worked, firm and free of clods. Drill row spacing should be 2 inches. Seeding depth should be 1/2 inch. Seeding deeper than 1 inch would result in a poor stand.

18. The permittee/operator shall be responsible for the prevention and control of soil erosion and gullying on the area covered by this permit and lands adjacent thereto and shall provide preventive measures as required by the following specifications:

    a. Normal cut and fill ratios for pipeline construction will be as follows:

        Cuts 0-10 feet high 3:1
        Cuts 10 feet and over 2:1

        Abnormal situations, such as hogback ridges or V-draws, will take special considerations to be approved in writing by the District Ranger.

    b. Following refilling of the trench, care will be taken to eliminate all berms to prevent concentration of water on the disturbed area.

    c. After refilling the trench, waterbars will be constructed at approximately the following intervals:

Percent of Slope	Waterbar Intervals--Feet
0-5	150
5-10	110
10-20	90
20-30	80
30+	70

    d. When pipelines are laid vertically down a slope, adjacent waterbars should spill water to opposite sides of the disturbed area to avoid concentration of water.

    e. All waterbars should extend at least 5 feet beyond the disturbed area.

    f. Waterbars should not be constructed in locations that will cause water to drain on fill slopes.

g. Mulching may be required on disturbed slopes. These sites will be mulched using clean straw or native grass hay.

19. The permittee/operator shall do everything reasonably within its power and shall require its employees, contractors, and employees of contractors to do everything reasonably within their power, both independently and upon request of the Forest Service, to prevent and suppress fires on or near the lands to be occupied under this permit.

20. All structures shall be painted to blend with the surrounding land features. Paint colors shall be approved by the District Ranger at Dickinson or Watford City, North Dakota.

21. All debris, such as wire, cans, pipe, cable, etc., shall be removed from the construction site and disposed of as approved by the District Ranger at Dickinson or Watford City, North Dakota. Garbage will be disposed of in an approved facility.

22. In the event of any loss of hydrocarbons from any facility, the District Ranger at Dickinson or Watford City, North Dakota shall immediately be notified.

23. Hydrocarbon cleanup operations will be approved by an authorized Forest Service representative prior to cleanup.

24. All pipelines, power lines, and telephone lines shall be installed 10 feet from existing lines unless otherwise authorized by the District Ranger at Dickinson or Watford City, North Dakota due to topographic or spacing constraints.

Fire Equipment and Requirements for Crews Working on the Little Missouri National Grasslands

1. Exhaust systems of vehicles shall have an acceptable muffler and shall be in proper working condition.

2. Fire extinguishers: Type ABC: One 2 lb. per pickup--or--
One 5 lb. for drill rigs and trucks over 1 ton gross weight
One 10 lb. per dozer, motor patrol, scraper, or other earth-moving equipment.

3. Each vehicle shall carry a shovel and ax and one of the following (per person):

a. Backpack water pump--4 or 5 gallon (Indian or equivalent)-- or--
b. Burlap bags in a 10 gallon or larger container of water-- or--
c. Fire swatter/fire brooms

4. All smoking will be done inside vehicles or in areas cleared of flammable material.

5. Each welding crew will have available a ground tanker of not less than 300-gallon capacity with a pump capable of pumping 20 gallons per minute at 100 pounds per square inch (psi) and not less than 100 feet of hose.

   A road grader or dozer will be kept in the immediate area during welding.

6. No welding will be allowed when winds are over 20 miles per hour.

7. Fire inspections will be held to check the above requirements.

Special Use Plat Requirements

Minimum requirements for pipeline, telephone, and underground cable plats on Forest Service land:

Maximum size of plat: 2 feet x 3 feet (Federal aid sheet size)

Title block with following:

- Name of company applying
- Size and type of line (gas, crude, etc.)
- Material (steel, plastic with tracer wire, etc.)
- Origin and destination
- Depth of line
- Right-of-way width
- Name of company preparing plat:
  - Date
  - Scale (1 inch = 1,000 feet minimum)
  - Drawn by (name)
- Signed, sealed, and dated by licensed engineer or surveyor in the State of North Dakota.

Plat shall show:

- Sections, township, range, north arrow, and 5th Principal Meridian
- Centerline of pipeline with stations at P.I.s
- Property boundaries and land ownership, including adjoiners
- Crossing of existing utilities (identify both overhead and underground)
- Roads, highways, and other existing improvements
- Bearing of tangents
- Length of line on Forest Service by subdivision
- Land ties at subdivision boundaries identifying what is being tied to (set stones, brass cap, etc.)
  Subdivision boundaries are defined as section lines.
- Land ties also required at point of entry and exit of Forest Service lands.

CORPS OF ENGINEERS

U.S. DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS

The Army Corps of Engineers has prescribed management practices that should be followed, to the maximum extent practical, for discharges covered by the Nationwide 404 Permit (items 1 through 8). Additionally, certain conditions (33 CFR 323.4-3(b)) must be met under the Nationwide Permit authority (items 9 through 16). For further detail, please see the Army Corps of Engineers Permit Program "A Guide for Applicants" (November 1, 1977).

1. Discharges of dredged or fill material into United States waters should be avoided or minimized through the use of other practical alternatives.

2. Discharges in spawning areas during spawning seasons should be avoided.

3. Discharges should not restrict or block the movement of aquatic species indigenous to the waters, impede the passage of normal or expected high flows, or cause the relocation of the waters (unless the main purpose of the fill is to impound water).

4. If any discharge creates an impoundment, adverse impacts on the aquatic system caused by the accelerated passage of water or the restriction of its flow should be minimized.

5. Discharges in wetlands should be avoided.

6. Heavy equipment used in wetlands should be placed on mats.

7. Discharges into breeding and nesting areas for migratory waterfowl should be avoided.

8. All temporary fills should be entirely removed.

9. Preconstruction bottom contours cannot change. (Excess material must be removed to an upland disposal area.)

10. The discharge cannot occur near a public water supply intake structure.

11. The discharge cannot destroy a threatened or endangered species as identified under the Endangered Species Act or endanger the critical habitat of such species.

12. The discharge cannot disrupt the movement of aquatic species indigenous to a water body.

13. The discharge must consist of suitable material that is free of toxic pollutants in other than trace amounts.

14. The fill created by a discharge must be properly maintained to prevent erosion and other nonpoint pollution sources.

15. The discharge must not occur in a component of the national wild and scenic river system or in a component of a state wild and scenic river system.

16. No access roads, fills, dikes, or other structures can be built below the ordinary high water of the streams specified under the Nationwide Permit. These structures would require separate Section 404 permits.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Since construction of the pipeline will involve river crossings, a Nationwide Section 404 Permit will be required. Generally river crossings are covered under the permit, although specific permits (Individual 404 and Section 10 permits) will be needed for important crossings. An individual permit will be required if filling of any wetlands is involved. The U.S. Environmental Protection Agency evaluation of applications will be conducted in compliance with Section 404 (6) (1) guidelines. For this project, the U.S. Environmental Protection Agency will likely recommend the following measures for major river crossings:

a. Dredged materials should be stored away from the flowing waters;

b. Disturbed wetland or riverine areas should be revegetated with native trees, shrubs, and grasses where applicable;

c. The permit should consider appropriate times for river disturbance that do not interrupt fish spawning cycles. This consideration may involve identifying "gaps" or "windows" for construction between different spawning seasons.

More mitigation measures will be considered for the following after more details are received:

d. Provisions for backfillings;

e. Lengths of riprapping involved; perhaps some limitations to minimize use of riprap.

STATE OF MONTANA

STATE OF MONTANA

When building or operating on Montana state land the following mitigation measures and stipulations will apply:

General Measures

1. The company shall schedule a preconstruction conference before any construction of facilities begins. The company's field representative and contractors involved in construction or maintenance of facilities shall attend the preconstruction conference. Contact the Office of the Commissioner, Montana Department of State Lands, 1625 Eleventh Avenue, Helena, Montana, at (406) 444-2074 for arranging a date and location for this meeting.

   At this conference the company should indicate or submit a schedule of its construction activities. The grantee shall keep the Department of State Lands (DSL) inspector informed of changes in the schedule.

2. The Helena Office of Disaster and Emergency Service, (406) 449-3034, shall be notified of all pipeline ruptures that may occur during operation of the pipeline system.

3. Except where Federal Aviation Administration (FAA), Occupational Safety and Health Administration (OSHA) regulations, and others dictate otherwise, exteriors of structures shall be painted the same color as that used on federal lands.

4. The company shall survey and flag the exterior limits of the approved construction areas every 300 feet. All activities associated with construction or maintenance of the pipeline facility must be conducted within the approved limits.

5. The company shall install right-of-way or line markers. The number, size, height, type, and color of these markers will be the same as those used on federal lands.

6. Clearing should not proceed more than 10 miles ahead of backfilling operations.

7. The preferable method of vegetation control during pipeline maintenance is by mechanical methods. However, if herbicides are needed, the company shall comply with the applicable federal and state laws and regulations concerning the use of pesticides (insecticides, herbicides, fungicides, rodenticides, and other similar substances) in all activities or operations under this grant. The company shall obtain approval from DSL of a written plan prior to the use of such substances. The plan must provide the type and quantity of material to be used; the pest, insect, fungus, etc. to be controlled; the method of application; the location for storage and disposal of containers; and other information the DSL may require. The plan to be submitted each year may be the same as that

required by the Federal Government. Emergency use of pesticides may occur. The use of substances on or near the right-of-way shall be in accordance with the approved plan. A pesticide shall not be used if the U.S. Environmental Protection Agency has prohibited its use. A pesticide shall not be permanently stored on state lands authorized for use under this grant.

8. A pumper truck capable of holding 250 gallons of water shall accompany all welding operations. During construction, similar fire control equipment shall be available on short notice for use on any portions of the right-of-way where equipment is operating or where there is traffic.

   The company's contractors shall, prior to right-of-way clearing, (a) contact local fire control officials and establish procedures to be used in the event of fires outside the right-of-way, (b) inform construction foremen of these procedures; and (c) locate water sources close enough to construction sites to be effective in suppressing fires. In the absence of convenient water sources, tank trucks containing sufficient water to control fires will be available, especially during dry and windy conditions. Contractors' equipment may be operated off the right-of-way on state lands for fire control. All equipment and vehicles operated on the right-of-way shall be equipped with at least a shovel, swatter, and a 2-pound or larger ABC fire extinguisher. All vehicles on the right-of-way shall have spark arresters on exhaust systems.

9. The company's Erosion, Sedimentation Control, and Restoration Plan, and all other plans requiring approval by the Office of the Federal Inspector (OFI) shall be binding upon the company unless otherwise specified by DSL. Inspection and quality control procedures established by the company and the OFI will be followed, including DSL procedures as established by a Cooperative Agreement between the OFI and Montana.

10. Any modifications to these and specific stipulations must be approved in writing by the DSL.

Erosion, Sedimentation Control, and Restoration Stipulations

1.0 General

The DSL requires that the right-of-way be restored as near as practical to pre-construction conditions. The goals of restoration are to control erosion; restore natural contours to the extent practicable; restore natural drainage patterns and hydrological conditions; and establish a plant cover adapted to the region, similar to that which occurred originally. During and after construction, necessary structural and vegetative practices will be implemented as specified herein to control erosion and sedimentation.

Generally, the major long-term control of erosion and sedimentation will be by vegetative means. Temporary erosion control measures will be used where required to minimize erosion and sedimentation during construction. Steep areas with unfavorable soils will require site-specific controls as identified by the company.

2.0 Clearing and Surface Preparation

The right-of-way will be cleared of obstruction and graded where necessary to permit construction equipment to operate safely. The extent of clearing and surface preparation shall be restricted to the minimum necessary for construction.

2.1 Clearing of Vegetation

2.1.1 Shrubs (e.g., Sagebrush). A dozer or motor grader will be used to uproot shrubs from the trench line. The root systems of woody plants on spoil side of the right-of-way shall be preserved where possible. Where shrubs are large enough to interfere with construction equipment, additional clearing may be done, keeping surface disturbance to a minimum. Cleared vegetative material may be disposed of by chipping and spreading them over disturbed areas to serve as mulch.

2.2 Disposal of Rock

Where rocks are brought to the surface of cultivated lands, which may interfere with cultivation, they shall be disposed of in a manner specified in Site-Specific Stipulations. No rocks or boulders will be permitted over the backfilled trench or crown where none occurred before. Rocks or boulders that were removed during construction will be replaced according to the size, type, and density of those occurring in the adjacent undisturbed areas.

2.3 Grading

On rough lands, shaping by cutting and filling may be required to permit construction activities where identified by the Company inspector. Grading shall tie in with federal land requirements.

2.3.1. Cuts and fills shall be limited to the minimum necessary for trenching operation.

2.3.2. Topsoil shall be stripped from cut areas and stockpiled separately for topsoil replacement during restoration as specified in the Site-Specific Stipulations.

2.3.3. Subsoil materials from cuts shall be stockpiled for recontouring upon completion of trenching operations. Excess material shall be placed in approved disposal areas specified in the Site-specific Stipulations where minimal erosion can be expected to occur. Excess material shall be shaped to blend with adjoining lands and to provide a landform suitable for revegetation.

2.4 Access Roads

2.4.1 Temporary Access Roads. Access to the right-of-way will normally be from existing public roads. Where existing public roads do not provide sufficient access to the right-of-way, temporary access roads may be required. All temporary access roads must be approved by DSL prior to construction. The Contractor shall be responsible for obtaining permission to use private roads and trails, and on state lands, approval by DSL. Upgrading existing trails or building of new temporary access roads shall be in accordance with the following guidelines:

2.4.1.1. Roads shall be located where possible to avoid erosion-prone areas, drainages, areas of woody cover, wetlands, or other sensitive areas and are subject to approval by the company and DSL. Topsoil will be salvaged and replaced after use.

2.4.1.2. The roads shall be designed with gutters and culverts properly located to minimize erosion and sedimentation as required.

2.4.1.3. Dust shall be controlled, where required, by surfacing with dust-free materials or by a suitable water sprinkling or other dust abatement program.

2.4.1.4. Abandoned access roads shall be cleared of all materials, and returned as nearly as practicable to pre-construction contours and conditions. Revegetation shall be in accordance with Section 5.

2.4.2 Use of the Right-of-Way as a Road. Damages to the right-of-way caused by use of the right-of-way as a road will be kept to a minimum. Use of the right-of-way for workers commuting more than 5 miles to construction sites is prohibited; however, buses or vans may be used to transport workers. The company shall strip and stockpile topsoil from a traffic lane on state land parcels where the right-of-way is used as a road for access 5 miles beyond the parcel. Restoration of the portion of the right-of-way used as a road will proceed as in Section 2.4.1 except as follows: (a) temporary structures, such as culverts placed on ephemeral drainages, will be removed except as approved by DSL; (b) the company will provide structures such as fences and gates to prevent the use of the right-of-way as a public road or trail after construction is completed; (c) the company shall reduce soil compaction in the traffic lane through the use of chisel or disc equipment after topsoil is replaced.

2.4.3 Permanent Access Roads. All permanent access roads must be approved by DSL.

2.5 Firebreaks

Fire barriers will be built along the edges of the construction right-of-way where the adjoining vegetation consists of very dry, flammable grasses and mature, small grains. These areas will be specified in the Site-Specific Stipulations.

2.5.1. Plow, blade, or otherwise expose mineral soil for a width of 10 feet on each interior side of the right-of-way.

2.5.2. The firebreaks will be restored in conjunction with the final right-of-way restoration.

2.6 Trenching

Where soil conditions permit, the trench shall be excavated with a rotary wheel ditcher. Other areas will be excavated with backhoe or other appropriate equipment.

2.6.1 Double Trenching. This method refers to the excavation and placement of the surface soil in a separate windrow, normally opposite the working side of the right-of-way. Excavation may be with trencher or tractor and scraper. The remaining soil is then excavated by trencher or backhoe and placed in the zone between the surface soil windrow and trench. Double trenching will be used on all state lands. At least 6 to 10 inches of topsoil will be salvaged unless otherwise specified in the Site-Specific Stipulations.

2.6.2 Noxious Weeds. Where the right-of-way is routed through noxious weed areas, the exit side will be flagged to indicate that equipment shall be raised, inspected, and cleaned of noxious weed fragments and seed. Where possible, the company will provide the locations of noxious weed areas, such as leafy spurge, in advance.

2.6.3 Crossings. As requested by DSL, machinery and cattle crossings will be provided at specified locations. These locations will be specified in the Site-Specific Stipulations.

3.0 Backfilling, Cleanup, and Finish Grading

3.1 Backfilling

After the pipe has been lowered into the trench and its position inspected and approved, backfilling operation will begin.

3.1.1 Standard Backfilling. Where there is no topsoil, the windrow of spoil will be returned to the trench with a crown of soil sufficient to compensate for settlement (normally 12 inches). Excess spoil shall be spread in a thin layer over the right-of-way. Unsuitable materials will be removed to approved disposal sites specified in Site-Specific Stipulations.

3.1.2 Double Backfilling. Topsoil shall be segregated when present, and the windrow of subsurface soil shall be returned to the trench, leaving sufficient space for the return of the surface soil windrow. After the surface soil has been placed and crowned, any remaining subsurface soil shall be spread in a thin layer over the right-of-way. Unsuitable materials will be removed to approved disposal sites.

3.2 Cut Slopes

Any cut slopes shall be finish-graded to a stable slope, less than the angle of repose as directed by the company inspector.

3.3 Streambanks

Streambanks shall be finish-graded as specified in Site-Specific Stipulations.

4.0 Erosion and Sedimentation Control Structures

Erosion and sedimentation control structures shall be built or installed where directed by the company, based on field conditions during and immediately after construction.

4.1.1 Mulching. Areas with sand to sandy loam soils or as required by DSL on a specific site are treated under Section 5, Revegetation.

4.1.2 Wind Barriers. Areas of loamy, fine sand to sand, facing the prevailing winds, are susceptible to blowouts. In addition to mulching materials, these areas, on a case-by-case basis as specified in the Site-Specific Stipulations, may require the installation of temporary snow or slat fences across wind exposed sites. The purpose of these fences is to reduce wind velocities to non-erosive levels at the soil surface. Snow fence rows shall be at right angles to the prevailing wind and shall be spaced approximately two rods apart.

4.2 Diversion Ditches

This practice is used to intercept runoff water from higher lying areas that could cause erosion on the right-of-way and to divert drainage through protected outlets.

4.2.1 Cross Section. Shall be V-shaped with stable sideslopes and graded sufficiently to facilitate revegetation.

4.2.2 Grade and Velocity. Grade may be uniform or variable. Where required, ditch checks will be installed to reduce water velocity, based on field determinations.

4.2.3 Location. Shall be determined by outlet conditions, topography and right-of-way easement terms.

4.2.4 Outlets. May be grassed waterway, armored area, grade stabilization structure, stable watercourse, or underground outlet. The outlet must convey runoff to a point where the outflow will not cause damage.

4.2.5 Restoration. Disturbed areas will be treated in accordance with Section 5, Revegetation.

4.3 Transverse Berms, Terraces, and Levees

As directed by the company inspector, a series of low dikes will be installed across the right-of-way in sloping areas and constructed at sufficient frequency to reduce slope length and thus prevent the concentration of runoff water originating primarily within the right-of-way. Stream banks will also be protected from erosion during construction, where required, by constructing terraces or levees to prevent runoff and reduce sedimentation.

4.3.1 Spacing. Shall be determined by the company inspector, based on soil erodibility, ground cover conditions, slope-predicted runoff, and capacity requirements.

4.3.2 Size. Shall be a sufficient size to control the expected runoff originating between transverse berms on the right-of-way. Transverse berms shall normally be at least 3 feet high and 12 feet wide and drain at a maximum gradient of 1 foot per 100 feet. The design may be modified depending on landowner requirements.

4.3.3 Location. The location will be influenced by spacing requirements. Where possible, locations shall be adjusted to allow discharge onto grassed waterways, well vegetated areas, sites favorable for armoring or other structural controls, or access requirements of the landowner.

4.3.4 Maintenance. These diversion facilities will be repaired and maintained as required by DSL after passage of traffic or subsequent operations.

4.3.5 Restoration. Berms will be revegetated in accordance with Section 5, Revegetation.

4.4 Grade Stabilization Structures

These are structures installed in permanent and intermittent watercourses and outlets from diversion ditches and transverse berms where concentration and flow velocity of runoff waters is such that they are needed to stabilize the grade in channels or to control gully erosion.

4.4.1 Types. Included are check dams, letdown structures (armored outfalls), and stilling basins.

4.4.2 Location. Shall be determined by outlet conditions and topography.

4.4.3 Design. Shall be adequate to safely control anticipated runoff to which the structures will be subjected.

4.4.4 Restoration. Disturbed soil will be shaped and revegetated in accordance with Section 5, Revegetation.

4.5 Lined Waterway or Outlet

A lined waterway or outlet is a waterway having a lining of rock or other erosion resistant material. Its purpose is to provide safe disposal of runoff from other erosion control structures or natural concentrations of flow where unlined or grassed waterways would be inadequate.

4.5.1 Application. The tract is applicable where--

4.5.1.1. Concentrated runoff is such that a lining is needed to control erosion.

4.5.1.2. Steep grades, wetness, prolonged base flow, seepage, or piping could cause erosion.

4.5.1.3. Soils are highly erosive or other soil or climatic factors preclude using vegetation.

4.5.2 Design. Shall be adequate to carry the expected flows and velocity as determined by the company inspector or DSL based on field conditions.

4.5.3 Restoration. Disturbed soil shall be shaped and seeded in accordance with Section 5, Revegetation.

4.6 Sediment Basins

A basin will be constructed to trap and store water-borne sediment from trench dewatering operations, construction sites, and other sediment-yielding areas where identified by the Company inspector. This practice may be used where right-of-way conditions preclude the installation of erosion control measures to keep the soil in place.

4.6.1 Location. Shall be as close as possible to the sediment-yielding area taking into consideration topography and right-of-way easement terms.

4.6.2 Capacity. Shall equal or exceed the volume of sediment expected to be trapped during the predicted, sediment-yield period.

4.6.3 Design. Embankment and spillway sizing shall be adequate to withstand the impact of run-in waters.

4.6.4 Restoration. Disturbed soil shall be shaped to facilitate restoration. Temporary basins shall be recontoured to blend with the existing topography. Seeding will be in accordance with Section 5, Revegetation.

4.7 Sediment Filters

Bales of hay or straw may be placed along drainages to filter sediments resulting from a water discharge where directed by the company inspector.

4.8 Ditch Plugs and Sack Breakers

4.8.1 Ditch Plugs (Sack Breakers). Ditch plugs consisting of trench sack breakers will be installed where required to impede or prevent longitudinal water movement down the backfilled pipeline trench.

4.8.1.1 Application. Sack breakers will be installed in potholes or other areas such as steep slopes and stream crossings where topography and permeable backfill materials may allow water to drain down the backfilled trench. Sack breakers will be installed where the company determines that standard compaction procedures will not control the water movement.

4.8.1.2 Design Criteria. Sack breakers will consist of 1-cubic-foot sacks of earth or sand placed around the pipe from the trench bottom to within 12 inches of the surface for the full dimensions of the trench. The sack breakers will normally extend along the trench for a thickness of three sacks.

4.8.2 Temporary Ditch Plugs. At stream crossings and wetland areas specified by the company inspector, a segment of unexcavated material shall be left along the trench line to minimize water diversion down the trench. These plugs will be excavated immediately before the pipe section is lowered.

4.8.3 Wetland (Pothole) Sealing. In wetland areas, identified by the company, where trenchs may intersect and disrupt impervious layers resulting in induced drainage, a bentonitic slurry will be used to seal the trench over the permeable zone.

5.0 Revegetation

The primary purpose of revegetation is to control erosion and to restore existing land use and vegetation types. Revegetation work by the contractor will include primarily rangelands (native pasture), stream banks and grassed waterways, wetlands, and other areas that are not under active crop production. Such areas will return to current use according to the practices of the landowner following

cleanup, finish grading, and surface preparation which will be the responsibility of the contractor unless otherwise specified by DSL. Special restoration measures will also be required for field windbreaks, visual resources, and wildlife habitat where specified by the company that will provide site-specific plans.

5.1 Right-of-way Surface Conditions after Construction

5.1.1 Native Vegetation Areas.

5.1.1.1 Level to Sloping Lands. The actual trench will have no residual vegetation cover. The remainder of the right-of-way will have varying amounts of trample damage from vehicular traffic and some vegetative scalping from backfill operations and associated activities. Natural native seed, rhizomes, and viable root materials will be present throughout the non-trenched area.

5.1.1.2 Sloping to Steep Lands. These lands will have had varying amounts of land-grading activities to enable the operation of trenching and associated equipment. Graded and recontoured areas will have no residual vegetation cover except where surface soil has been stockpiled and respread.

5.1.2 Cropland, Hayland, and Tame Pasture. These areas will have had partial to total loss of residual vegetation cover. DSL and the surface lessee will accomplish revegetation with compensation following cleanup, finish grading, and surface preparation by the contractor unless otherwise specified in the Site-Specific Stipulations.

5.2 Seedbed Preparation

This shall be specified where the right-of-way is to be restored to permanent vegetation. Areas of cropland, hayland, and tame pasture will be revegetated by DSL or the surface lessee unless directed otherwise in Site-Specific Stipulations.

5.2.1 Fertilization. Fertilizer shall be broadcast, as a first step, over the entire right-of-way at the rate of 50 pounds per acre each of Nitrogen (N) and Phosphate (P_2O_5). Where directed by DSL, a strip 100 feet wide on each side of the right-of-way may also be fertilized. Fertilizer shall be labeled with the manufacturer's guaranteed analysis as governed by applicable fertilizer laws.

5.2.2 Compaction Relief. One or more passes with chisel-or disc-type equipment shall be made in travel areas that may have been compacted by heavy equipment passage. In areas of summer fallow land, the direction of the chiseling will match the tillage pattern in the undisturbed portion of the fields in order to minimize wind erosion and to allow snow to accumulate on the fallowed strips as opposed to drifting down the right-of-way.

5.2.3 Packing. An agricultural-type packer shall be used to firm chiseled areas to the degree practical that a person's footprint will leave no more than a 3/8-inch-deep impression in the soil to be seeded.

5.3 Temporary Seeding

Where permanent seeding is delayed by construction schedules or other factors, a temporary cover crop shall be planted to control wind and water erosion in areas identified by the company:

5.3.1 Spring Thaw to June 15. Plant winter wheat at the rate of 60 pounds per acre.

5.3.2 After June 15. Plant sudangrass at the rate of 20 pounds per acre.

5.3.3 Mowing. As necessary, the cover crop shall be mowed before the permanent seed mixture is planted, as provided in site-specific requirements.

5.4 Permanent Seeding (Rangelands or Native Pasture, Streambanks, etc.)

Based on the proximity of native seed sources outside the right-of-way, some natural revegetation of the right-of-way is anticipated. To complement natural regeneration, five basic seeding mixtures will be used.

5.4.1 Standard Mixture. An adapted grass mixture to be used on non-problem areas where slope or soil conditions do not pose special considerations.

5.4.2 Sand Mixture. A sand-tolerant grass mixture to be used where soil materials range from sand to sandy loam.

5.4.3 Saline Mixture. A saline/alkaline-tolerant grass mixture to be used where soil materials are strongly saline/alkaline.

5.4.4 Badland Mixture. A mixture of very hardy grass and shrub species capable of establishing on badland-type topography found in Montana and North Dakota.

5.4.5 Wetland Mixture. A mixture of grasses adapted to saturated soils having a tolerance to wide fluctuations in soil moisture conditions.

5.4.6 Plant Species and Rate. When the final location has been established, a table will be made showing where seeding mixture will be used.

5.4.7 Seed Quality (Certification).

5.4.7.1 Weed and Seed Laws. All seed shall be in accordance with applicable seed laws and labeled accordingly. Seed lots shall not contain any noxious weed seed, as listed in the weed control laws of Montana.

5.4.7.2 Application. Seed quantities shall be based on Pure Live Seed determinations. Each seed lot shall carry a label showing (1) purity analysis and (2) the viability, as determined by germination or tetrazolium test methods. The viability test shall have been made within 9 months of the actual seeding date.

5.5 Time and Methods for Permanent Seeding

Seeding shall be done after October 15 until freeze as a dormant planting to break the dormancy of native seed. Allowing the seed to over-winter in the soil increases the rate of germination during the following spring.

5.5.1 Drilled Plantings. Where topography permits, seeding shall be accomplished with standard or grassland drills. Equipment shall be fitted with grass seed drill boxes, agitators, and press wheels and shall be capable of adjustment to maintain a planting depth of 1/2 inch or less. Seeding rates shall be as specified for the seeding mixture being used. Planting depth shall be no more than 1/2 inch.

5.5.2 Problem Planting. Where drill planting is impractical, one of the following alternatives may be used:

5.5.2.1 Broadcast Planting. Hand equipment, such as a cyclone seeders will be used to apply the seed mixture at a doubled rate and applied as a split application at approximate right angles. Whenever possible, follow with light harrowing and packing or hand-raking.

5.5.2.2 Native Grass Mats. Mats shall be formulated according to the appropriate seeding mixture and rates. Mats shall be applied and anchored in accordance with the manufacturer's recommendations.

5.5.2.3 Hydroseeding. The hydroseeder will apply the appropriate mixture at rates in accordance with manufacturer's recommendations.

5.6 Mulching

To prevent potential wind and water erosion, mulch shall be applied to all areas seeded with sand- or badland-seeding mixtures or subject to severe wind erosion and on all slopes, 2:1 or steeper. Choice of vegetative or commercial mulches is optional on areas with slopes ranging from level to 2:1. Commercial mulches shall be used on slopes greater than 2:1.

5.6.1 Vegetative Mulch.

5.6.1.1 Materials. Wheat, oat, or barley straw from which grain has been removed shall be used. At least 50 percent of the stems shall exceed 10 inches when mechanically anchored. When tacked with asphalt, resin, or netting, 50 percent of the stems shall exceed 6 inches.

5.6.1.2 Application. The rate shall be 4,000 pounds per acre when anchored with mulch-tiller equipment. When anchored with emulsion tack, netting, or hand methods, the rate shall be 3,000 pounds per acre.

5.6.1.3 Anchoring. Shall be accomplished by one of the following methods:

5.6.1.3.1. A commercial mulch tiller or a weighted farm disc set straight may be used. Equipment shall be capable of tucking the straw to a depth of 3 inches without cutting. If straw is brittle and breaks during the anchoring process, it shall be lightly sprinkled to facilitate operations.

5.6.1.3.2. Emulsion tack shall be applied with approved spray equipment and in accordance with manufacturer's recommendations.

5.6.1.3.3. Netting shall be stapled to the soil surface in accordance with manufacturer's recommendations.

5.6.1.3.4. Peg and twine shall be staked and tied on a 4-foot grid.

5.6.1.3.5. Hand-mulching material shall be punched into the soil surface with a square pointed spade in rows 12 inches apart.

5.6.2 Commercial Mulch. Excelsior erosion control blankets, wood cellulose fiber mulches, asphalt, asphalt emulsion, and resin emulsion shall be applied in accordance with manufacturer's recommendations. Use of asphalt, asphalt emulsion, and resin emulsion must approved by DSL.

5.7 Maintenance

The company will monitor young seedlings for at least two full growing seasons to ensure their survival and stand development.

5.7.1 Weed Control. Competitive weed growth shall be controlled as necessary by spraying or mowing as follows:

5.7.1.1. Approved post-emergent herbicides shall be applied after the seeded grasses are in the 3-leaf stage and before weeds reach a height of 4 to 6 inches. Repeat applications to control regrowth may be required by the company. Application rates shall be in accordance with the manufacturer's recommendations.

5.7.1.2. Mowing may be used as an optional control or as a supplement to herbicide control as designated by the company. Mowing shall be restricted to spring mowing the first year when the weeds are 8 to 12 inches high. Mowers shall be adjusted to cut above the average height of the new grass seedlings.

5.7.2 Grazing Control. Wherever necessary, plantings will be protected from grazing for at least two growing seasons or until vegetation is established. In agreement with the landowner, the company will make one or more of the following arrangements:

5.7.2.1. Provide temporary fencing where practical.

5.7.2.2. Arrange for year-long, deferred grazing.

5.7.2.3. Arrange for winter grazing only.

5.8 Evaluation of Grass Revegetation

During the reestablishment period, stand counts shall indicate a density of 3 to 5 plants per square foot. Three plants of rhizomatous species shall be adequate. Five plants per square foot are necessary for bunch grasses. Where this criteria cannot be met, reseeding shall be scheduled.

5.9 Revegetation of Wetlands

Wetland areas will be seeded where identified by the company, based on its wetlands study. Active revegetation will be limited to reseeding with the wetland seed mixture (Mixture No. 5) at rates that will provide complete vegetative coverage in shallow impoundments and peripheral coverage in deep basins. The seed mixture will be broadcast over exposed areas of the wetland impoundments. The deeper, water vegetation zones will not be revegetated but will return to normal through natural revegetation.

5.9.1 Fertilization. Fertilization will normally not be required where topsoil had been segregated. Where directed, fertilization rates will be in accordance with Section 5.2.1.

5.10 Revegetation of Woody Plants

Revegetation of woody plants will be performed as required in areas specified in the Site-Specific Stipulations. These types of areas may consist of field windbreak plantings, visual resource restoration, and wildlife habitat restoration. In general,

revegetation of woody vegetation will be accomplished by minimizing surface disturbance to the extent necessary for construction and by preserving as much rootstock as possible during right-of-way and site preparation.

5.10.1 Field Windbreaks.

5.10.1.1 Preservation of Existing Plants. Field windbreaks will be crossed, as nearly as practical, at a direction normal to the alignment of the rows of trees or shrubs. Where possible, the contractor will restrict the width of the construction right-of-way to preserve trees and shrubs.

5.10.1.2 Transplanting Existing Stock. Where specified in the Site-Specific Stipulations, the contractor may be required to dig up and ball shrubs and stockpile them for transplanting after finish-grading. Shrubs will be top-pruned before being lifted and kept moist. The contractor will guy the shrubs as required after they are transplanted. The trees or shrubs will not be transplanted directly over the pipeline.

5.10.1.3 Plantings of Seedlings. Where specified in the Site-Specific Stipulations, seedlings will be acquired from commercial sources and planted at intervals corresponding to the original plantings.

5.10.1.4 Maintenance. Survival will be monitored during operations and remedial plantings will be made as required.

5.10.2 Visual Resource Restoration. Where required, special visual resource plantings will be made in areas designated by the company, and the company will provide site-specific plans.

Visual restoration will involve screen plantings of wood species occurring in adjacent areas or establishing clumps of vegetation along the right-of-way to provide curvature. Well-developed clumps of vegetation along the right-of-way or staging area will be preserved wherever possible to provide an irregular boundary and break up the linear appearance.

The following plans will be based on site-specific evaluations, which will be conducted in conjunction with the confirmation surveys and marking of construction working limits and will include--

5.10.2.1. Schematic drawings of the site showing the survey boundaries, highway right-of-way or river channel, existing vegetation patterns, and the location and arrangement for the special plantings with respect to the position of the observers and their line of sight.

5.10.2.2. The species, size classes, and number of plants to be used (most of the plants will be seedling and shrub size at the time of planting).

5.10.2.3. Instructions for acquiring and handling plant materials, which will normally be accomplished by stockpiling plants during clearing, transplanting from approved locations adjacent to the disturbed area, or utilizing available commercial sources.

5.10.2.4. Planting instructions, including timing, hole size, fertilization, top-pruning, guying, and watering if required. Planting will normally be done in early spring prior to budbreak or during the fall dormant period.

5.10.2.5. Where designated by the company, visual resource plantings will be fenced to control livestock grazing for a period identified by the company, subject to approval by the surface lessee.

5.10.2.6. Implementation of the plans will be closely inspected by the company. Survival and growth will be monitored until the criteria in Section 5.8 are met. Remedial work will be performed where required.

5.10.3 Wildlife Habitat Restoration. Woody seedlings and shrubs will be planted where required on sites, as specified in the Site-Specific Stipulations, where woody cover existed prior to construction. Woody plantings will be made according to site-specific plans provided by the company.

5.10.3.1 Objectives. The purpose of this revegetation will be to complement and hasten the reestablishment of woody cover. The goal will be to establish a cover of woody plants on portions of the construction right-of-way and staging areas, comparable in density and composition to that which occurred originally.

5.10.3.2 Procedures. The procedures used will follow those described in Section 5.10.2, except that commercially available seedling will normally be used.

5.10.3.3 Grazing Control. The company will assess sites in terms of livestock usage. Where it is determined that grazing would likely result in vegetation failure, special plantings will be implemented subject to provisions for grazing control agreed upon with DSL and the surface lease.

5.11 Drought Conditions

These stipulations will be modified as necessary to take into account drought conditions that may occur during construction and restoration. Modifications in Sections 5.0 through 5.10 may especially be necessary, including more frequent application of mulch to prevent soil loss from wind erosion and the use of mulch during construction. Grantee shall consult with DSL and the OFI as necessary if drought conditions continue.

6.0 Plats

6.1 Survey Plats.

Survey plats shall conform to federal requirements. Additionally, the center line shall be identified on each parcel of state land crossed, 40 acres or larger in size, with cadastral references to at least the greater quarter section.

Site-Specific Stipulations

In addition to the preceding stipulations, Site-Specific Stipulations must be developed to minimize or mitigate potential impacts. Site-Specific Stipulations have been developed, which would apply to right-of-way grants across state lands. Site-Specific Stipulations were developed by aerial and on-the-ground reconnaissance and review of existing data, such as soils survey information collected by the grantee. The Site-Specific Stipulations were included in the State of Montana Supplement.

State of Montana Site-Specific Stipulations require that locations be identified for--

- Disposal sites for excess rock and overburden.
- Areas with high fire hazard where fire barriers or other techniques may be employed for minimizing the risk of fires from construction-related activities.
- Areas with fine soils susceptible to blowouts where wind barriers or other techniques may be used for reduction of wind erosion.
- Areas where lined waterways or other erosion control techniques may be required.
- Areas where each of the five permanent seeding mixtures should appropriately be employed. The five permanent seeding mixtures were listed in the State of Montana Supplement as site-specific stipulations on Montana land properties. These mixtures are listed as standard, sand, saline, badlands, and wetlands.
- Areas where revegetation with woody plants should be used to maintain field windbreaks, visual resources, and wildlife habitat.

- Areas where topsoil should be stripped to specified depths and kept separate from the lower subsoils.

- Areas where topsoil from roads should be stockpiled to minimize wind and water erosion.

- Areas where fences should be constructed to minimize damage to revegetation efforts.

- Areas where special measures should be adopted to minimize disruption of important wildlife/livestock areas, such as breeding/calving areas, grouse leks, critical habitat, and raptor nests.

- Areas where toxic or excessively saline of alkaline subsoils will be buried in the pipeline trench and covered with sufficient topsoil of a quality sufficient to support revegetation.

- Areas where existing trees or shrubs will be salvaged for replacement on the right-of-way after construction.

- Areas where machinery and cattle crossings are required.

- Areas where streambanks shall be finish-graded.

- Areas where sediment basins are required.

- Areas where extremely wet sites occur, exterior limits of the right-of-way shall be flagged.

Other Measures that Montana State or Local Agencies may Require

Weeds

The revegetation guidelines for the Montana portion of the Northern Tier Pipeline Project contain the following recommendations: "It is recommended that maintenance weed control on rangelands be undertaken only on those areas where an active county program is underway and adjacent landowners are controlling their weeds. Otherwise, weed control should be limited only to areas where weeds originating on the right-of-way are invading adjacent areas where the weeds do not currently exist. Control of broadleaf species will be the primary objective of maintenance programs" (Long et al. 1979:10-1 - 10-2).

DNRC recommends that during the second and third growing seasons following completion of restoration and reseeding, the owner should arrange for an inspection of the right-of-way and access roads with a representative of the local weed district to identify any newly established stands of noxious weeds. In the event that stands of noxious weeds are encountered, appropriate control measures should be taken by the owner (DNRC 1984:21).

The best means of preventing weed propagation through seeds and plant parts carried by vehicles is to clean construction vehicles before they are brought into a new area and also before leaving each area containing established

stands of noxious weeds. All construction equipment used on the pipeline project should be thoroughly cleaned before being brought to the project area. Well before construction begins, representatives of Exxon and Shell should contact the weed control boards of affected districts in order to determine the locations of areas currently infested with noxious weeds. In many cases, the weed districts have maps showing locations of noxious weed infestations (Huether 1985; Williams 1985), but some field inspection of the right-of-way will certainly be required where no weed surveys have been done.

All infested areas identified should be clearly marked on the ground as well as on the plan and profile. All construction vehicles should be cleaned to remove clods of dirt, seeds, and weed parts before leaving these areas. This technique was employed with almost complete success on the Northern Border Pipeline Project (Freymiller 1985; Shuck 1985). A requirement for complete cleaning of equipment was contained in the contract specifications for the project (Shuck 1985). The time required to clean the vehicles was small and the resultant costs of the measure were insignificant (Freymiller 1985). The measure was very effective, and nowhere was the Northern Border Project known to have caused the spread of noxious weeds as a result of contaminated equipment (Ashley 1985; DeVrie 1985; Freymiller 1985; Goulet 1985; Grenston 1985; Hartman 1985; Panasuk 1985; Shuck 1985; Stellflug 1985; Warren 1985).

Historical, Archaeological, and Paleontological Concerns

A paleontologist should be present during construction in the Hell Creek formation, especially where known fossils exist, such as in the Baker vicinity. This monitoring should be done for construction of both the pipeline and access roads.

If large fossils are uncovered during trenching or cutting and filling for access roads, they should be examined by a trained paleontologist before further disturbance occurs. Exxon should consult with BLM, Montana SHPO, and other interested agencies to protect important fossils discovered during construction. This measure should specify procedures for evaluating the importance of fossil finds, collecting and recording information from the fossils, and housing or otherwise protecting important fossils.

CO_2 Pipeline Safety

Fracture Arrestors. BLM's draft EIS briefly addresses rupture frequency and cause, but does not say whether fracture arrestors would be used to limit longitudinal ruptures. The need for fracture arrestors is an engineering decision based on safety factors of the pipeline as built, and no decision has yet been made for this pipeline. However, in view of suggestions by Federal Office of Pipeline Safety personnel, fracture arrestors should at least be used to protect public right-of-way crossings, residential areas, and the oil field facilities around Baker. Pipeline design should investigate the potential for propagation of longitudinal fractures. If fracture arrestors are required for the pipe used in construction, they should be no more than 1,000 feet apart in these areas and closer where necessary to portect life and property.

READEX FICHE

Uncased Right-of-Way Crossings. A major drawback of cased crossings is the corrosion that often develops between the pipe and the protective casing. An option available under DOT and ANSI regulations allows the use of thicker (higher strength) pipe without a casing at right-of-way crossings. This option is supported by the Montana PSC pipeline engineer as the only effective way to eliminate corrosion. The pipeline also should have fracture arrestors at the edges of the right-of-way.

Weld Inspection. The BLM draft EIS said 90 to 95 percent of welds would be inspected on the Exxon pipeline and 100 percent on the Amoco line. Because ruptures are most likely to occur at weld points, experts recommend x-ray inspection of all welds. The inspections become more important because of the particular difficulty in welding the joints in thick-walled pipe, and the potential for corrosion from carbonic acid formed by water combining with CO_2 inside the pipe. The experts recommend inspection by a qualified third party.

Welder Certification. Welder certification is critical on this pipeline for several reasons. Welding the thick-walled pipe used in high-pressure pipelines requires welders with special qualifications. DOT pipeline regulations 192.227 and 192.229 should be regarded as the minimum standard for welders on this proposed pipeline.

The applicant or its contractors should provide information on the welding contractor's experience and track record, the certification procedures to be utilized in testing welders, and the minimum experience accepted for welders.

Pipeline Construction Across Roads

1. The pushing or boring construction option will be required for roadway crossings, although open trenching may be allowed at the discretion of the responsible agency.

2. If the open trench construction option across roadways is allowed, the contracting company will wet backfill materials when compacting backfill in the trench. All costs associated with open trench construction, such as signing, flagging, inspection, and all detour costs, will be at the sole expense of the applicant or its contractors.

3. Backfilled trenches will be regularly inspected for fill settling and roadway surfaces will be rehabilitated over a 2-year period at the expense of the applicant or its contractors.

4. Roadway maintenance costs above those scheduled by the responsible agency, which are attributable to accelerated deterioration of roadway surfaces during the construction phase of the project, will be reimbursed by the applicant or its contractors. Any portion of state highways used for haul road purposes during construction of the project will be maintained by the project contractor.

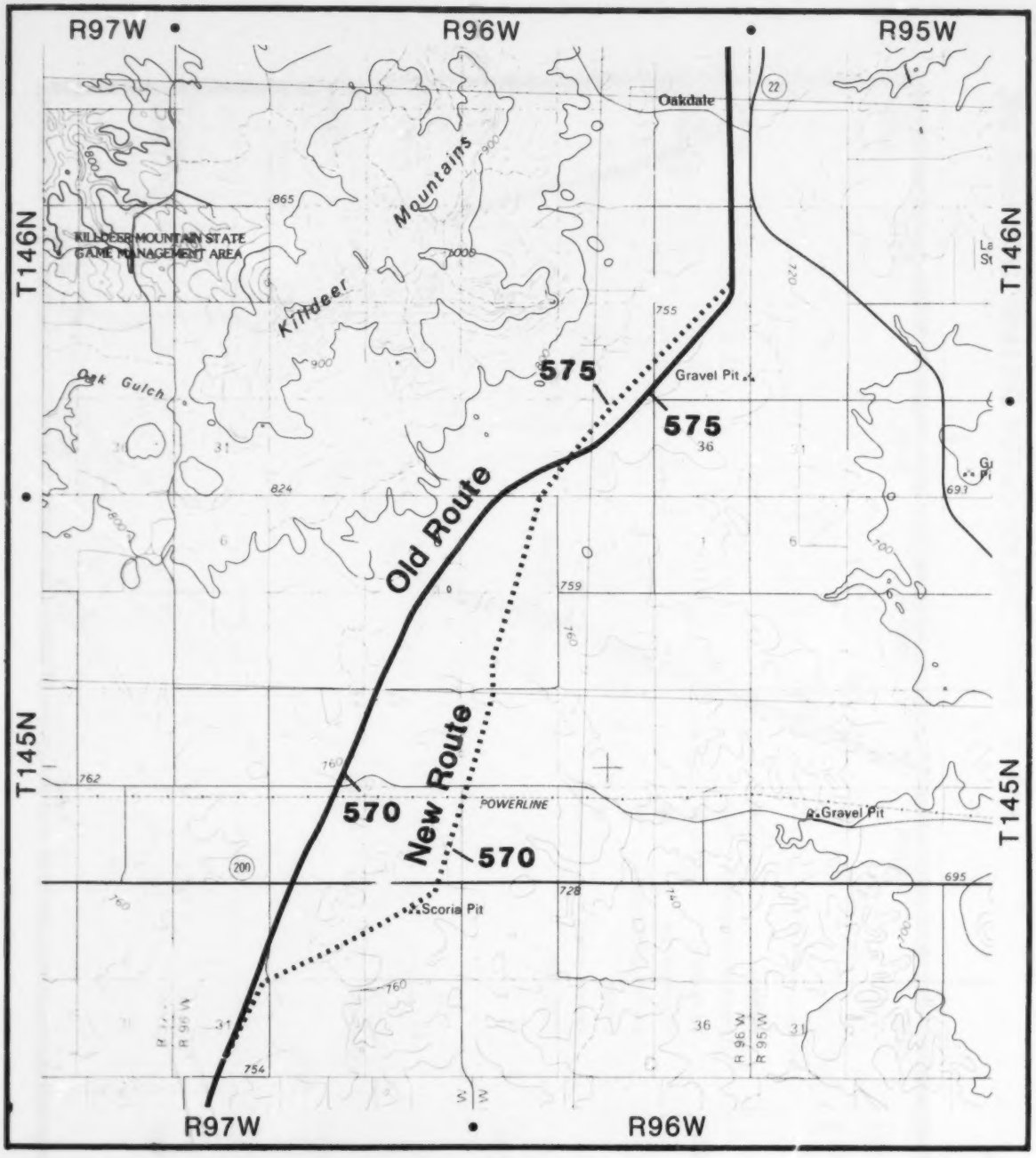
5. Any road or land closure of state highways to accommodate project activities will be required to have the prior approval of the Montana Department of Highways (MDOH). The applicant or its contractors will be required to reimburse MDOH for all MDOH costs associated with project related road closures or travelled land closures.

UNCOMMITTED MITIGATION

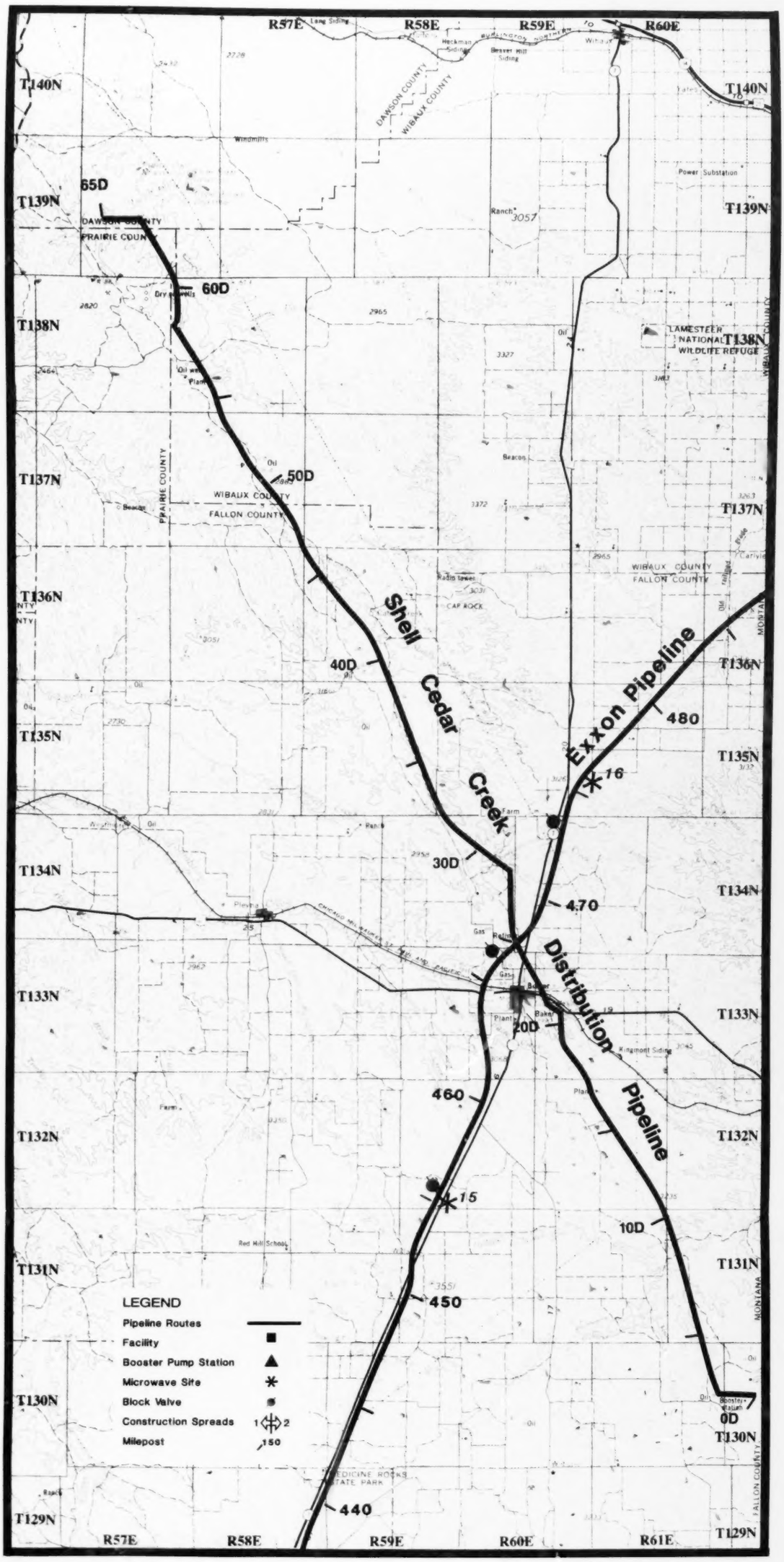
Impacts to social and economic conditions of Bairoil, Wyoming could be lessened by (1) helping provide a community planning staff, (2) developing a work camp with temporary housing for construction and contract personnel, and (3) developing a monitoring system to determine direct project-related impacts to the community.

Disturbance to windbreaks or shelterbelts would be lessened by (1) limiting surface disturbance to the smallest area needed for construction, (2) preserving root stock as much as possible, and (3) transplanting.

APPENDIX 2
PROJECT MAPS



MAP 1 ROUTE VARIATION



MAP 2 SHELL CEDAR CREEK DISTRIBUTION PIPELINE

The Endangered Species Act of 1973 requires, under Section 7, that any federal agency carrying out any action that might affect a threatened or endangered species must consult with the U.S. Department of the Interior, Fish and Wildlife Service, concerning the effects of the action on threatened or endangered species.

In response to the Bureau of Land Management's request for consultation on the effects of the proposed Bairoil/Dakota Carbon Dioxide Projects (September 24, 1985), the Fish and Wildlife Service has provided its Biological Opinion, which has been reproduced in its entirety in this appendix.

APPENDIX 3

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Endangered Species, Field Office
Federal Bldg., U.S. Courthouse
301 South Park
P.O. Box 10023
Helena, Montana 59626

IN REPLY REFER TO:

W.02 Bairoil/Dakota CO_2 Projects December 10, 1985
6-1-85-F-025

MEMORANDUM

To: Chief, Division of Environmental Impact Statement Services, Bureau of Land Management (BLM), Denver Service Center, Denver, CO

From: Field Supervisor, Endangered Species, Helena, MT (SE)

Subject: Section 7 Consultation - Bairoil/Dakota Carbon Dioxide Project

This is the Fish and Wildlife Service's (FWS) biological opinion prepared in response to your September 24, 1985 request for formal consultation on the effects of the proposed Bairoil/Dakota Carbon Dioxide (CO_2) Projects to the endangered black-footed ferret (Mustela nigripes). The FWS has examined the proposed action in accordance with the Section 7 Interagency Cooperation Regulations (50 CFR 402, 43 FR 870) and the Endangered Species Act of 1973, as amended (ESA). This biological opinion refers only to the potential effect on the black-footed ferret and not the overall environmental acceptability of the proposed actions.

PROJECT DESCRIPTION

Exxon Company USA (Exxon), Amoco Production Company (Amoco), and Shell Pipeline Corporation (Shell) propose to construct pipelines to transport CO_2 from the Rangely CO_2 pipeline near Rock Springs, Wyoming to near Tioga, North Dakota. Exxon proposes to build two segments of a CO_2 pipeline that would carry 450-500 million cubic feet per day (MMcfd). One segment would transport CO_2 from the Rangely CO_2 pipeline near Rock Springs to Bairoil, Wyoming; and the other segment from Bairoil to near Tioga, North Dakota. Amoco proposes to build a pipeline that would carry 150-200 MMcfd of CO_2 from the Rangely CO_2 pipeline to Bairoil. Negotiations are underway between Exxon and Amoco as to which company will actually transport CO_2 to the Bairoil oil recovery project. Shell proposes to build a CO_2 pipeline that would move CO_2 into oil fields along the Cedar Creek Anticline near Baker, Montana for use in oil recovery.

In addition to a CO_2 pipeline, Amoco proposes to begin improved oil recovery using CO_2 in its Bairoil, Wyoming oil field. The recovery project would include a gas separation plant; CO_2 distribution and collection pipelines in the oil fields; a pipeline to carry the produced oil from the field to the existing Frontier pipeline in Wyoming; and an oil storage tank at the point the oil pipeline joins the Frontier pipeline.

The Bureau of Land Management (BLM) has combined and analyzed all of the projects proposed by Exxon, Amoco, and Shell as the companies' proposed action for the purposes of an Environmental Impact Statement (EIS).

BIOLOGICAL OPINION

It is the FWS's biological opinion that construction of the proposed Bairoil/Dakota CO_2 Projects is not likely to jeopardize the continued existence of the black-footed ferret throughout all or a significant portion of its range. This opinion is contingent upon the completion and results of ferret surveys, and our review and concurrence with survey results; and reinitiation of formal consultation if ferrets or their sign are located during surveys or monitoring programs related to the proposed projects.

We concur with your determination of "no affect" to the bald eagle (Haliaeetus leucocephalus), peregrine falcon (Falco peregrinus), whooping crane (Grus americana), and piping plover (Charadrius melodus).

BASIS OF OPINION

Black-footed ferret. We note that much of the information presented in the biological assessment (BA) was antiquated. For example, the BA states on page 1, "Recent studies of the ferret suggest that while rare in South Dakota, it may be most abundant in that state." A population of ferrets was known to occur in Mellette County, South Dakota in the late 60's - early 70's. However, no confirmed sightings of ferrets have been documented in Mellette County since then (Jobman, 1985; Jobman and Anderson, 1981). More pertinent to this opinion is the fact that black-footed ferrets were discovered near Meeteetse, Wyoming in September 1981 (Clark, 1983; Dexter, 1985). The BLM in Wyoming has published two technical bulletins based upon research conducted at Meeteetse since 1981:

1) Handbook of Methods for Locating Black-Footed Ferrets. Wyoming BLM Technical Bulletin No. 1 (Clark et al. 1983); and

2) Black-Footed Ferret Habitat: Some Management and Reintroduction Considerations. Wyoming BLM Wildlife Technical Bulletin No. 2 (Forrest et al. 1985).

Bulletin No. 2 may have been published too late to be consulted for the BA, but we reviewed its content in light of its relevance to this opinion. Bulletin No. 1 contains important information that should be consulted for preparation of the appropriate ferret survey strategy for this project. The BA does mention that studies are underway at Meeteetse. However, the most recent literature citation in the BA is from 1979. Numerous publications have occurred in the scientific and popular journals since then, including the published proceedings from a 1984 Black-Footed Ferret Workshop in Laramie, Wyoming (Anderson and Inkley, 1985).

The BA mentions that white-tailed prairie dog (Cynomys leucurus) towns may occur along the pipeline route. We note that the project is in the range of both the white-tailed and black-tailed prairie dog (Cynomys ludovicianus ludovicianus).

We have relied on historic and recent data and research findings on the ferret; and consultation with private researchers, Wyoming BLM personnel, and ERT Consultants to conclude no jeopardy to the black-footed ferret. As stated earlier, our determination is contingent upon the following:

1) Completion of black-footed ferret surveys in all white-tailed and black-tailed prairie dog towns that may be disturbed by the project, as recommended by current FWS and required by BLM black-footed ferret survey guidelines. See Appendix A for FWS guidelines in Montana and Wyoming;

2) Review and concurrence of completed ferret survey reports by this office prior to construction activities in affected prairie dog towns; and

3) That formal consultation be reinitiated if ferrets or their sign are located during surveys or later project monitoring activities.

Bald eagle. As stated earlier, we concur with your determination of "no affect" to the bald eagle. Our concurrence is based upon BLM's commitment to design powerlines according to Olendorff et al. (1981), as discussed in the draft EIS (Appendix 4, Item 5, Wildlife. g. pg. 181), and for pipeline construction to be limited to summer months.

Four bald eagle winter roosts are known near the proposed pipeline routes. Based upon distances between the roosts and the pipeline; no known roost areas are likely to be destroyed or disturbed by construction activities in the proposed route alignments. Roosts are known within the following locations:

1) T.34N., R.84W.

2) T.35N., R.84W.

3) T.42N., R.78W.

4) T.44N., R.76W.

If changes occur in the proposed pipeline route within these areas, impacts to the bald eagle should be reassessed and consultation reinitiated if impacts to eagles are identified which were not considered in the assessment and our opinion.

This concludes our biological opinion on the Bairoil/Dakota CO_2 Projects. Consultation should be reinitiated as discussed above, or if proposed project plans change. Your efforts to meet our joint responsibilities under the ESA are appreciated.

Wayne L Brewster

cc: RO FA/SE (60153)
OES
SE Grand Island
ES Billings

APPENDIX 3

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Forrest, S.C., T.W. Clark, L. Richardson, and T.M. Campbell. 1985. Black-footed ferret habitat: some management and reintroduction considerations. Wyoming BLM Technical Bulletin No. 2. Cheyenne, Wyoming. 49 pp.

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FISH AND WILDLIFE SERVICE BIOLOGICAL OPINION

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Endangered Species, Field Office
Federal Bldg., U.S. Courthouse
301 South Park
P.O. Box 10023
Helena, Montana 59626

IN REPLY REFER TO:

1101 & 1147

December 6, 1985

To Whom It May Concern:

This letter provides guidance needed to make assessments of Federally funded or authorized projects in Montana and Wyoming that may impact black-footed ferrets; a species listed as endangered under the Endangered Species Act (ESA). These guidelines focus on surveys to determine the presence of ferrets in prairie dog towns, it's principal habitat. The guidance provided is intended to assist in meeting our joint responsibilities under ESA to ensure that Federal actions do not jeopardize the continued existance of the ferret.

Since the discovery of the ferret population near Meeteetse, Wyoming in September, 1981, information about the biology of ferrets has increased substantially. A Handbook of Methods for Locating Black-footed Ferrets is available from Bureau of Land Management (BLM) and the Wyoming Game and Fish Department (WGF) in Cheyenne, Wyoming. We recommend this publication as an excellent reference for designing surveys to locate ferrets. A second technical bulletin published by BLM in Wyoming will provide extensive information about ferrets and their habitat at Meeteetse and will be an important companion to the handbook. This bulletin should be available in late summer or early fall, 1985.

The Denver Region 6 Office of FWS is preparing final general guidelines for conducting ferret searches throughout the potential range of the ferret (12 states). Those guidelines support Endangered Species Field Office discretion regarding criteria needed to know whether or not a particular prairie dog town is within the impact zone of a project and should be surveyed for ferrets. There are numerous variables that help predict the potential for ferrets to exist in a particular area across the ferret's range. These include extent and quality of habitat, past land and prairie dog management, and extent and frequency of reported observations. We believe the potential for ferret occurrences in Montana and Wyoming are higher than average.

Therefore, we recommend the following criteria for your use while evaluating projects and their possible impacts on ferrets in Montana and Wyoming. We have based these criteria on our review of ferret literature and communications with biologists that have experience with ferrets, their biology, and behavior. Since information is continuing to accumulate we expect some changes in its interpretation as present knowledge gaps are filled. We will provide updated guidance for Montana and Wyoming accordingly.

In order to give reasonable confidence that a ferret population will not be inadvertently impacted by a project, we recommend that ferret surveys be conducted on all active prairie dog towns in Montana and Wyoming that:

1). Occur within the right-of-ways (ROW) of any type of construction project. Surveys should be conducted on all portions of prairie dog towns intercepted by the ROW and those portions of the town that extend out to a distance of 1/2 mile from the ROW.

2). Are proposed for management which will result in a loss of prairie dog burrows (surface disturbance or obliteration) or prairie dog populations (projects such as biological or chemical control of prairie dogs).

(a). Ferret surveys should be conducted on all portions of the affected prairie dog towns and all portions of towns which occur within 1/2 mile of the perimeter of the prairie dog town proposed for management.

(b). If chemical control of prairie dogs is proposed using 2% zinc phosphide treated grains then (a) applies. If another form of zinc phosphide or another compound under registration with the Environmental Protection Agency is proposed, then surveys should include all portions of towns proposed for control and all portions of prairie dog towns which occur within a 1 mile radius of the perimeter of the town(s) proposed for control.

3). For reclamation/construction projects that lack defined ROWs (such as abandoned mine projects), we recommend that all prairie dog towns within 1/2 miles of these types of projects be located. If portions of prairie dog towns occur within 100 yards of access roads or trails or if prairie dog towns occur within 1/4 mile of sites proposed for rehabilitation or construction, we recommend informal consultation with this office to determine the need for ferret surveys.

We recommend the two acceptable methods to survey for ferrets or ferret sign discussed in the handbook of methods noted earlier. The variance presented in the following discussion is because we wish to provide guidelines for clearing certain actions in potential ferret occupied areas throughout most of the year rather than discover a ferret population under the "best" possible conditions. This is an important distinction relative to Section 7 compliance under ESA.

Diurnal (daylight) surveys for ferrets are recommended if surveys are conducted between December 1 and March 31. This type of survey is used to locate sign left by ferrets. Ferret tracks, scats, skulls, and diggings are more abundant and obvious during winter months because prairie dogs are less active and less likely to disturb or destroy ferret sign.

Daylight searches for ferret sign should meet the following criteria to fulfill the minimum standards of these guidelines.

1. Conduct the searches between December 1 and March 31, but not more than 1 year before prairie dog control or construction is started.

2. At least three searches are recommended on each town with at least a 10-day interval between searches. (In late fall radio-tagged ferrets have remained underground for up to 8 days on the Meeteetse, Wyoming, study area.)

3. On bare ground (no snow cover) hole-to-hole inspections for sign are necessary to maximize probability of finding sign.

4. Following fresh snowfall, vehicles may be used to search for tracks or ferret diggings, but complete visual inspection of each portion of the town surveyed is required (i.e. visually overlapping transects).

5. If ferret sign is observed, the prairie dog colony and any portion of the colony that extends beyond the project boundary will be surveyed as soon as possible using the spotlight search method to attempt to verify the presence of ferrets.

Nocturnal surveys involve the use of spotlighting techniques for locating ferrets. This survey method is designed to locate ferrets when the maximum population is expected to exist. Night surveys are recommended in Montana and Wyoming areas for the period July 1 to October 31. At this time, in this area, litters are expected to become active above ground at night, and as fall approaches, littermates establish independence from the mother. Ferret studies at Meeteetse, Wyoming show a marked decrease in ferret activity and/or sign above ground in November, April and

May. (See Handbook of Methods.... cited earlier). Therefore, we do not recommend expending resources to find ferrets during those three months. We also do not feel that acceptable confidence can be placed on results of ferret searches conducted during those months.

We recommend the following standards for nocturnal surveys:

1. Conduct surveys between July 1 and October 31, and not more than 1 year before prairie dog control or construction activities begin.

2. Continuous spotlight searching on a town between dusk and dawn for at least 3 consecutive nights is recommended. However, depending on vegetation, terrain, and size of towns, prairie dog colonies should be divided into tracts of 320 acres or less so that they can be systematically and repeatedly searched during each 3 night search period. During each night of search, the prairie dog town or tract should be completely searched at least three different times. (For example the entire town might be searched from dusk to 10 p.m., again from 11 p.m. to 1 a.m., and a third time from 3 a.m. to 5 a.m. on each of three consecutive nights.)

3. Observations on each prairie dog town or tract searched should begin at a different starting point on each successive night to maximize the chance of overlapping black-footed ferrets' nighttime activity period.

4. A survey crew consists of one vehicle and two observers equipped with one or two 200 to 300 thousand candlepower spotlights. In conditions not suitable for vehicles, a crew will consist of two individuals working on foot with battery-powered 200 to 300 thousand candlepower spotlights.

The following outline provides a general summary of the types of information useful to the FWS in reviewing the results of ferret surveys for concurrence with agency's decision of "may affect" or "no affect". This report will be for Section 7 compliance decisions and submitted to the FWS as part of Section 7 compliance. Headings listed below can be used on field data forms to ensure that all pertinent data are collected and surveys are not unnecessarily repeated. We recommend that a report summarizing survey data be prepared for each search effort and submitted to the lead agency and to this office.

Night Search (July 1 to October 31) or Daylight Search (December 1 to March 31):

(1) Date
(2) Hours spent searching (times started-stopped)
(3) Acres searched

(4) Number of colonies searched
(5) Number of burrows inspected
(6) Ferrets or ferret sign observed and locations
(7) Photos taken
(8) Searcher's names
(9) Weather conditions (include if bare ground or snow)
(10) Method of Search (back pack, vehicle, foot)
(11) Mapped survey route

Survey Summary

(1) Starting and completion dates for survey
(2) Total hours of spotlight search
(3) Total acres spotlight searched
(4) Total colonies spotlight searched
(5) Total ferrets observed and locations by night search
(6) Total hours searched in daylight
(7) Total area searched in daylight
(8) Total colonies searched in daylight
(9) Total ferret sign observed and location of sign seen during daylight search
(10) Narrative describing search technique(s) used

Field crew supervisors conducting ferret surveys should have experience with current survey techniques, ferret biology, and Section 7 compliance responsibilities. Workshops are now being offered through the University of Wyoming and the FWS Coop Unit at Laramie to provide this formal training. This one day workshop is presently offered at least once a year. Please contact the FWS Coop Unit in Laramie (307-766-5415 or FTS 328-4391), this office or Max Schroeder at (307-236-7398 or FTS 776-7398) for more information on these workshops.

You should also contact the appropriate State wildlife agency and local law enforcement authorities prior to conducting surveys. This kind of cooperation is important particularly for night spotlight searches since it will eliminate unnecessary private and local law enforcement response to night spotlighting.

Finally, if you find a ferret during surveys we request that you contact the nearest State wildlife agency and FWS Endangered Species Office as soon as possible. Premature media contacts should be avoided until confirmation of the ferret and appropriate landowner contacts and discussions can be completed by the State wildlife agency, the FWS, and the lead Federal agency sponsoring the surveys.

We recognize there will be situations that do not precisely fit the criteria and standards we have presented. We encourage direct contact with us either in person or via telephone to discuss the details of projects or this letter which may need further refinement to fit particular projects.

If you need further assistance or discussion on these guidelines please contact Ron Crete or myself at the above letterhead address or by phone at (406) 449-5225 or FTS 585-5225.

Sincerely,

Wayne G. Brewster
Field Supervisor
Endangered Species

WHEREAS, the Exxon Company USA (Exxon), Amoco Production Co. (Amoco), and Shell Pipeline Corporation (Shell) have applied to BLM for separate rights-of-way for several separate pipelines, a gas plant, and other facilities in Wyoming, Montana, and North Dakota and these rights-of-way applications are being considered in a collective manner as the Bairoil/Dakota Carbon Dioxide Project; and

WHEREAS, the Bureau of Land Management (BLM), the Forest Service (FS), and the Army Corps of Engineers (COE) have determined that issuance of rights-of-way for the Bairoil/Dakota Carbon Dioxide Project, as described in BLM's project preliminary Draft Environmental Impact Statement, June 1985, will have an effect on properties included in, eligible for, and potentially eligible for the National Register of Historic Places (i.e., cultural properties) and have requested the comments of the Advisory Council on Historic Preservation (Council) pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. 470) and its implementing regulations (36 CFR Part 800); and

WHEREAS, the Wyoming BLM (through the Casper District Office) will act as lead agency for all Federal agencies involved in this project;

NOW, THEREFORE, BLM, FS, COE, the Wyoming, Montana, and North Dakota State Historic Preservation Officers (SHPO's), and the Council agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on cultural properties.

STIPULATIONS

BLM shall ensure that the following measures are carried out:

I. Procedures and Roles:

All work set forth in this Agreement will be carried out in accordance with this Agreement and with the Procedures and Roles Document(s) for each Applicant that is acceptable to the signatories to this Agreement. The Roles and Procedures Documents for Exxon are appended as Appendices A and B, respectively. All work on the project segments for which the Exxon is the Applicant will be carried out in accordance with Appendices A and B and this Agreement. When other Applicants decide to implement their project plans, the Appendices A and B may be used or different such documents may be developed, tailored to the Applicant and their project segments.

Tailored Procedures and Roles Documents will be developed by the BLM, in consultation with the Surface Management Agency (SMA) and SHPO(s). The Council and the SHPO(s) must concur in these tailored Procedures and Roles Documents prior to their implementation. If there is disagreement regarding the review of these Procedures and Roles Documents, BLM will seek to resolve the disagreement as per stipulation XII of this Agreement. Changes in Appendix A and/or B or tailored Procedures and/or Roles Documents will be developed and reviewed in this same manner.

II. Identification of Cultural Properties

A. All areas, regardless of surface ownership, which may potentially be affected by the undertaking will be inventoried to identify cultural properties listed in, eligible for, or potentially eligible for the National Register of Historic Places (National Register). All classes of cultural properties and properties of the historic and prehistoric periods will be so identified. Survey at BLM Class III standards will be conducted on all lands not previously inventoried to that level. The size of corridors and other areas to be surveyed at the Class III level will be determined by the BLM and SMA and SHPO(s) and will be specified in the Procedures and Roles documents. See Appendices A and B of this Agreement for the Exxon project segments. At a minimum, the area of maximum surface disturbance from the project will be surveyed.

B. Methods and levels of recording cultural properties will be determined by the BLM and SMA and SHPO(s) and will be specified in the Procedures and Roles Documents. See Appendices A and B of this Agreement for the Exxon project segments.

III. Testing and Evaluation of Cultural Properties

A. Strategies acceptable to the BLM and SMA and SHPO(s) will be developed and implemented for testing to determine if cultural properties are eligible for the National Register. These strategies will be specified in the Roles and Procedures Documents. See Appendices A and B of this Agreement for the Exxon project segments.

B. Preliminary evaluations to determine if subsurface cultural properties are potentially eligible for the National Register will be based on an examination of soil development for depositional situations amenable to the preservation of subsurface archeological deposits through shovel testing or formal testing, as specified in the Roles and Procedures Documents. If acceptable to the

SHPO(s), subsurface cultural properties appearing to be eligible for the National Register or to have a soil depositional environment amenable to the preservation of such subsurface archeological deposits will be considered as preliminarily eligible for the National Register. Adverse effects to properties determined to be preliminarily eligible for the National Register in accordance with this subsection or determined eligible under subsections III.C. or D., below, in consultation with the SHPO(s), will be avoided by project relocation where feasible and prudent. Further detail about implementation of this subsection will be specified in the Roles and Procedures Documents. See Appendices A and B for further detail about how this will be implemented on the Exxon project segments.

C. The identification, survey, and testing information, including the preliminary evaluations resulting from subsection III.B., above, will be reviewed by the BLM and SMA and SHPO(s) to determine if such properties are eligible for the National Register. If there is not sufficient information to make such a determination, strategies acceptable to the SHPO for acquiring needed information will be developed and implemented. See Appendices A and B for further detail of how this will be implemented on the Exxon project segments.

D. If the Federal agencies and SHPO(s) disagree regarding whether cultural properties are eligible for the National Register, BLM or other Federal SMA will seek a determination of eligibility from the Keeper of the National Register of Historic Places in accordance with 36 CFR Part 63. The Keeper's determination will be considered final for the purposes of this Agreement.

IV. Treatment Plans for Cultural Properties

A. The preferred treatment alternative is avoidance of effects on cultural properties by project relocation.

B. Standards for Treatment Plans:

Where it is not feasible and prudent to avoid adverse effects to National Register-eligible properties by project relocation, Treatment Plans will be developed to set forth means to avoid or mitigate the adverse effects of the project on National Register-eligible properties. Treatment Plans will be developed for the largest possible increment(s0 of the project, acceptable to BLM and SMA, the SHPO(s), and the Council. The Treatment Plans will be in conformance with the principles in Part I and recommendations in Part II of the Council's "Treatment of

Archeological Properties: A Handbook" (Appendix C, attached) and the "Secretary of the Interior's standards and Guidelines for Archeology and Historic Preservation" (Federal Register, Vol. 48, No. 190, September 29, 1983, pp. 44716-44742) (Appendix D, attached). The Treatment Plans will take into account existing information to the maximum degree possible, especially in the formulation of subsections C.3., 5, and 6, below. These Treatment Plans will be implemented in accordance with this Agreement.

C. Contents of Treatment Plans will include, but not be limited to:

1. Specification of all cultural properties or portions of cultural properties to be affected by the project, including a description of the nature of such effects;

2. An explanation of the treatments proposed for cultural properties eligible for the National Register under criteria A, B, and/or C or portions of such properties, with an explanation or rationale provided for the choice of the proposed treatments;

3. An Archeological Research Design;

   For cultural properties eligible for the National Register under criterion D, an Archeological Research Design will be developed that specifies and explains the research questions to be answered by the data recovery efforts, the data needed to answer the questions posed including the sites and portions of sites to be investigated, and the methods to be used to address the research questions posed. Acceptable treatment options may include sampling of archeological sites which contain repetitive data and/or concentrating data recovery on sites or portions of sites that may yield the most significant information about history or prehistory. In addition, explanations or justification will be provided for the reasons for and appropriateness of the chosen research questions, data needs, specific sites and portions of sites proposed for data recovery, and methods proposed;

4. An explanation of the means and methods proposed for considering the concerns of Native American peoples, with a justification and rationale for the chosen means and methods;

5. An explanation of the areas of the project proposed for construction monitoring and open-trench inspection, with a justification or rationale for the areas so proposed;

6. Recommendations for the treatment of classes of cultural properties discovered by the open trench inspection and construction work monitoring. Recommendations will be made both for classes of cultural properties recommended as requiring further treatment and those requiring no further treatment, consistent with the Research Design above. Cultural property classes will be based on site type, cultural and temporal affiliation, etc. All recommendations will be justified and explained; and.

7. An explanation of all cultural properties that will be affected by the project for which no further treatment is proposed, with a justification or rationale for such proposed.

D. Distribution and Review of the Treatment Plans:

The Council and SHPO(s) will be afforded 5 working days to review the Treatment Plans. If the BLM, SMA, SHPO(s), or the Council disagree with the Treatment Plan(s) or the project's potential effects on a cultural property or portion of a cultural property that is eligible for the National Register, BLM will seek to resolve the disagreement in accordance with Stipulation XII of this Agreement. Cover letters transmitting Treatment Plan(s) will inform the Council and the SHPO(s) that the Plan is being forwarded in accordance with this Agreement, which provides for review within 5 working days.

V. Monitoring of Construction Work:

A. Monitoring of blading and/or trenching operations will be conducted in those areas determined appropriate by the BLM and SMA and SHPO. Areas to be monitored will be specified in the Treatment Plan(s). See also Appendices A and B of this Agreement for monitoring on the Exxon project segments. Such monitoring will be done in areas likely to yield significant buried cultural deposits (e.g., deep soils next to major drainages, etc.). Such monitoring will be done by a qualified archeologist.

B. Construction activities will be stopped in the area of potential effect surrounding a cultural property discovered during monitoring until the property's eligibility to the National Register has been determined and, if the property is found eligible, until a course of treatment has been determined and implemented.

C. Cultural properties discovered during monitoring will be recorded to a level sufficient to allow determinations of eligibility for the National Register to be made.

Emergency consultations or a meeting will be held within five working days of the cultural property's discovery. The eligibility of the cultural property will be determined in accordance with stipulation III.B and C., above. If the property is determined eligible, the BLM and SMA and SHPO will decide on a course of treatment consistent with the recommendations in the appropriate Treatment Plan.

D. The course of treatment for National Register-eligible cultural properties discovered during monitoring will be implemented in such a way to minimize or avoid delays to pipeline construction, to the extent feasible and prudent.

VI. Open Trench Inspection:

A. Inspection of open trenches for evidence of buried cultural properties will be conducted in some areas between completion of trenching and pipe-laying. Areas to be inspected will be determined by the appropriate BLM District and SMA and SHPO and will be specified in the Treatment Plan(s). See also Appendices A and B of this Agreement regarding open trench inspections on the Exxon project segements. Inspected areas will be those likely to yield significant buried cultural deposits.

B. Cultural properties discovered during the open trench inspection will be recorded and/or treated in accordance with stipulation V.C. and D., above.

VII. Reporting on the Investigations of Cultural Properties:

A. Reports generally will conform to the guidelines in the Council's "Treatment of Archeological Properties: A Handbook" and the "Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation." Specific content and format will be approved by the appropriate BLM District and SMA and SHPO. BLM Districts will consolidate report review comments and send them to the SHPOs with requests for review. Scheduling of reports will take into account the amount of data recorded or analyses required, and other factors related to the reporting effort. The scheduling goal is to achieve timely, high quality reporting.

B. All aspects of survey, testing, and evaluation of cultural properties will be contained in a single formal report on a state-by-state basis or in several format reports for segments of the pipeline on a state-by-state basis. This report will be submitted to the BLM and SMA according to a schedule developed by the BLM, SMA, and SHPO.

C. Results of treatment will be reported on a state-by-state basis. These reports will be submitted to the BLM and

SMA according to a schedule developed by the appropriate BLM District, SMA, and SHPO after completion of all data recovery relevant to the Treatment Plans.

D. Results of monitoring and/or open-trench inspection will be reported on a state-by-state basis. This report will be submitted to the BLM and SMA according to a schedule developed by the appropriate BLM District, SMA, and SHPO after completion of the monitoring and open-trench inspection and data recovery resulting from monitoring and open-trench inspection in a given state.

E. A final project report will be completed that synthesizes all work undertaken pursuant to this Agreement and the results of such work. Format, content, and scheduling of this report will be worked out by by mutual agreement of the BLM, SMA, and SHPOs.

VIII. Evaluation of Cultural Properties After Completion of Cultural Resources Work:

Nominations to the National Register of Historic Places will be requested from the Keeper of National Register for those cultural properties that have been evaluated as eligible through consensus decision between the BLM and/or SMA and the SHPO in the conduct of this Agreement after the completion of all work called for in this Agreement.

IX. Policy on Landowner Denial of Access for Cultural Resource Work:

Significant cultural properties will be treated in such a way that adverse effects are either avoided or mitigated through effective treatment programs regardless of surface ownership. Should access be denied to any non-Federal lands to carry out the requirements of this Agreement, the Applicant will take all reasonable steps to obtain such access. Should further efforts fail to obtain access the appropriate BLM District and/or SMA will consult with the SHPO(s) and the Council per 36 CFR Sec. 800.4 to determine what further steps, if any, must be taken to satisfy the intent of this Agreement. Until such consultation is complete, neither the Applicant nor BLM will take or sanction any actions that would have an adverse effect on a cultural property which may be located on the property to which access has been denied.

X. Curation:

A. Collected cultural materials will be stabilized, labeled, and catalogued. Materials from FS lands in North Dakota will be curated by the FS under existing policies. Materials from Montana and other North Dakota lands will be placed in BLM's Montana Curation Center. Materials from Wyoming will be stored according to existing curation agreements.

B. The disposition of cultural materials from private lands will be determined by the landowner, after all analysis is completed. If the landowner wishes the materials to remain in government possession, they will be curated per stipulation X.A., above.

XI. Human Remains:

The BLM District or SMA will consult with appropriate Native American peoples regarding the treatment of Indian remains.

XII. Dispute Resolution:

Should there be disagreement regarding the implementation of this Agreement, the disagreeing parties will consult with the Council. Sufficient information describing the disagreement will be forwarded to the Council and the Council will make its recommendations within 15 working days from receipt of the documentation. The BLM and SMA and Applicant will adhere to the Council's recommendation or notify the Council's Executive Director as to why the recommendations cannot be followed and request that he ask the Chairman to schedule the issue for consideration at a Council meeting. Until the Chairman has responded and/or the Council has provided its comments, the BLM and SMA and Applicant will not take any action regarding the disputed issue that may affect cultural properties eligible for the National Register or potentially eligible for the National Register. Other aspects of this Agreement about which there is no disagreement may be implemented during the period of dispute resolution.

XIII. Failure to Carry Out the Terms of this Agreement:

Failure to carry out the terms of this Agreement requires that the BLM again request the Council's comments in accordance with 36 CFR Part 800. If the BLM or SMA or Applicant cannot carry out the terms of this Agreement, no actions shall be taken or sanctioned that would result in an adverse effect with respect to cultural properties which may be eligible for the National Register covered by the Agreement or that would foreclose the Council's consideration of modifications or alternatives to the project that could avoid or mitigate the adverse effect

until the commenting process has been completed.

XIV. Amendment to this Agreement:

If any of the signatories to this Agreement determines that the terms of this Agreement cannot be met or believes a change is necessary, that signatory shall immediately request the consulting parties to consider an amendment or addendum to this Agreement. Such an amendment or addendum shall be executed in the same manner as the original Agreement.

XV Reporting on the Fulfillment of this Agreement:

Within 90 days after carrying out the terms of this Agreement, BLM will provide a written report to all signatories to the Agreement on actions taken to fulfill the terms of this Agreement.

Execution of this Memorandum of Agreement evidences that BLM, FS, and COE have afforded the Council a reasonable opportunity to comment on the Bairoil/Dakota Carbon Dioxide Project and its effects on cultural properties and that BLM, FS, and COE have taken into account the effects of the undertaking on cultural properties.

11-26-85
Montana State Historic Preservation Officer (date)

11/4/85
North Dakota State Historic Preservation Officer (date)

10/30/85
Wyoming State Historic Preservation Officer (date)

10-23-85
Wyoming State Director (date)
Bureau of Land Management

Jan 9, 1986
Executive Director (date)
Advisory Council on Historic Preservation

27 Jan. '86
Chairman (date)
Advisory Council on Historic Preservation

APPENDIX 4

FORM APPROVED
BY RMS

I concur:

D K Kiltau 12/9/85

Exxon Pipeline Co. (date)
Project Manager

FINAL MEMORANDUM OF AGREEMENT

Attachment A

Roles and Responsibilities of Participants

Bairoil/Dakota Carbon Dioxide Project

Exxon Portion

1. In conformance with roles defined for other aspects of federal involvement in the Bairoil/Dakota Carbon Dioxide Project, BLM will coordinate actions required under the Memorandum of Agreement.

2. Casper District Office (CDO), BLM lead, will be the overall coordinator of activities under the Agreement.

a. CDO will monitor the progress of all cultural resource work to ensure that its scheduling tracks with other aspects of the undertaking. Potential problems in the progress or phasing of cultural resource work will be communicated to the participants in MOA activities in the state concerned (see attachment B).

b. CDO will be the federal contact with the Council on matters related to the Agreement.

c. CDO will keep a consolidated record of transactions among the participants in MOA activities for all states. Copies of correspondence, telephone confirmation, and meeting notes will be forwarded to CDO by the consulting parties.

d. CDO will coordinate the pre-work conference for the participants in MOA activities in Wyoming and keep minutes of the meeting.

3. BLM Districts and other SMAs will be responsible for coordinating consultation and compliance activities in conformance with the Agreement in their area of jurisdiction.

a. Districts/SMAs will make agency decisions and provide agency input for Agreement activities in their area of jurisdiction.

b. Districts/SMAs will coordinate the pre-testing and post-testing conferences and keep minutes of those meetings.

c. Districts/SMAs will monitor the Applicant's consultant regarding progress and performance on formal site testing strategies and mitigation.

d. districts/SMAs will be responsible for ensuring that surface disturbance from construction activities is stopped in the area surrounding a cultural property discovered during monitoring and that the provisions of Stipulation 5 of the Agreement are carried out.

e. Districts will consolidate SMA reviews of draft reports and forward them to the appropriate SHPO with a request for SHPO comments.

4. Miles City District Office (MCDO) will coordinate the pre-work conferences for the participants in MOA activities in Montana and North Dakota and keep minutes of those meetings.

5. SHPOs will perform review and compliance activities per the MOA in their respective states.

6. State agencies which are not SMAs may become a concurring party to the Agreement in conformance with existing agreements.

7. The applicants will be active participants in the Agreement and consultation process and may be a concurring party to the Agreement.

a. The Applicant will hire qualified consultants to perform survey, testing, preliminary evaluation, mitigation, monitoring, and reporting as required to comply with the Agreement.

b. The primary consultant to the Applicant will be in general charge of all Agreement activities involving the consultants. The primary consultant represents the Applicant in the participation process unless the Applicant designates another representative (see Attachment B). The primary consultant will attend all conferences designated in the Agreement.

APPENDIX 4

Attachment B

Summary of MOA Procedures

Bairoil/Dakota Carbon Dioxide Project

Exxon Portion

These procedures are incorporated into the Agreement through Stipulation 1 of the Agreement. They are intended to detail more specifically the nature and timing of various actions which are necessary to insure that the requirements of the Agreement are met. The procedures also identify more specifically who is responsible for completing the actions.

While these procedures were developed for the Exxon segment of the project to expedite the review process in the Council's regulations (36 CFR 800), different procedures may be developed for other portions of the Project which are still in the planning stage, as appropriate. If alternate procedures are needed, they may be developed among the appropriate BLM and/or SMA and SHPO(s). Alternate procedures must conform to Stipulations in the body of the Agreement.

As used in this Summary of Procedures, the "consulting parties" include the BLM and/or SMA(s), SHPO(s), and the Council (if present). Other parties involved in the procedures are referenced to collectively as "participants".

Item 2 of these procedures concerning inventory and initial evaluation offers alternatives (A&B) either of which may be used within a given state as approved among the appropriate BLM District(s), SMA(s), and SHPO.

FINAL MEMORANDUM OF AGREEMENT

MOA Procedure	Participants/ Consulting Parties/ Responsible Parties
1. State Prework Conference A meeting held before field work commences to review activities related to the Agreement and to reach decisions on unresolved issues. Consulting parties should concur on the the following: a. Inventory strategies for facilities not specifically addressed in Item 2 of the Summary of MOA Procedures (ie., gas processing plants, distribution pipelines, field facilities, booster stations, etc.) b. Inventory strategy for historic structures vis a vis visual impact assessment. c. Methods and levels of site recording d. Strategies for preliminary site evaluation e. Collection policy f. Assignment of site numbers g. Treatment of human remains h. Other issues which may arise	Consulting Parties CDO-Wyoming lead MCDO-ND & MT lead SMAs SHPO Participants BLM Districts Applicant's Consultants Interested St Agencies (optional)

APPENDIX 4

MOA Procedure	Participants/ Consulting Parties/ Responsible Parties
2. Inventory and initial evaluation	
a. Alternative A Procedure	
(1) Complete Class III survey and preliminary site evaluations based on shovel testing or formal testing. Minimum areas to be surveyed include 100 feeton both sides of the pipeline right-of-way centerline (total 200 feet), 50 feet on both sides of access road centerlines (total 100 feet) and 10 acres surrounding communications towers.	Responsible party Applicants Consultant
(2) Complete site record forms and document the results of preliminary testing.	Same as above
(3) Recommend avoidance of potentially eligible properties and implement avoidance where necessary to facilitate project scheduling	Applicants Consultant and applicant
(4) For potentially eligible properties which cannot be avoided, document why project relocation is not feasible and prudent.	Applicant's Consultant
(5) Recommend a program of further testing for potentially eligible properties on which adverse effect may not be avoidable.	Same as above
(6) Send documentation to the appropriate BLM/ SMA/SHPO offices as much in advance of the pre-testing conference as possible.	Same as above

MOA Procedure	Participants/ Consulting Parties/ Responsible Parties
(7) Conduct the pre-testing conference. The pre-testing conference is a meeting or meetings to review the results of survey and initial testing and to decide on further testing needs and strategies.	Consulting parties: Appropriate BLM District Appropriate SHPO Participants: Applicant's Consultants Interested St. Agencies
(a) Review site forms, preliminary evaluations and recommendations for further testing.	Same as above
(b) Review the rationale behind preliminary decisions that effects to certain potentially eligible properties are unavoidable.	Same as above
(c) Determine which potentially eligible, unavoidable properties need further testing and evaluation and define the strategies for formal testing of those properties.	Consulting parties above
(d) Concur on other matters as necessary to proceed to the next phase of the procedures.	Consulting parties above
b. Alternative B Procedure	
(1) Initiate Class III survey. Minimum areas to be surveyed include 100 feet on both sides of the pipeline right-of-way centerline (total 200 feet), 50 feet on both sides of access road centerlines (total 100 feet) and 10 acres surrounding communications towers.	Responsible party: Applicant's Consultant

(2) Complete site record forms and document the results of testing. Do enough testing on potentially eligible sites to confirm or deny eligibility.	
(3) Recommend avoidance of potentially eligible properties.	Same as above
(4) For potentially eligible properties which cannot be avoided, document why project relocation is not feasible and prudent.	Same as above
(5) Send documentation to the BLM and SHPO as much in advance of the on-site evaluation conference as possible.	Same as above
(6) Conduct on-site evaluation conferences as needed. The evaluation conference is to be held when one or more properties have been tested and eligibility determinations must be made before rerouting or further testing may begin. Consulting parties concur on eligibility, avoidance, and perhaps on further testing strategies for unavoidable eligible properties. Decisions on further testing may be deferred until the pre-testing conference.	Consulting parties: Appropriate BLM District/SMA Appropriate SHPO Participants: Applicant's Consultants Interested St. Agencies
(7) Conduct the State pre-testing conference. The pre-testing conference is a meeting to review the results of survey, preliminary testing, and evaluation not discussed or resolved at the on-site evaluation conference. Consulting parties concur on formal testing strategies for unavoidable eligible properties. Other business may be conducted	Same as above

such as determining the potential effect to properties with standing structures and strategies for further evaluation of structures. This conference may be omitted if the consulting parties concur that all decisions necessary at this stage of the process have been made at on-site evaluation conferences. Documentation needed for review at the pre-testing conference will be sent to the BLM and SHPO as much in advance of the conference as possible.

3. Formal Testing

Formal testing is the systematic excavation of test pits to better understand the nature, density, and distribution of cultural materials in archaeological properties. It is intended to provide the data necessary to make final evaluations of National Register eligibility and/or to devise treatment plans.

a. Implement formal testing program — Applicant's Consultants

b. Monitor progress and compliance with testing strategies — Appropriate BLM District or SMA

4. Preliminary Treatment Planning

Treatment plans are prepared by state. Documentation is submitted to the appropriate consulting parties as much in advance of the post-testing conference as possible. The

Responsible Party: Applicant's Consultants

consulting parties must be allowed a minimum of five working days to review the documentation before the conference.

5. State Post-Testing Conference	Consulting Parties:
A meeting or meetings held in each state to review the results of site testing and treatment planning.	Appropriate BLM District Appropriate SHPO The Council Participants: Applicant's Consultants Interested St Agencies
a. Review testing results and make final judgements about property eligibility.	Consulting Parties
b. Review treatment plans for eligible properties and modify them as needed.	Same as above
c. Determine strategies for monitoring construction work and areas to be monitored.	Same as above
d. Determine strategies for open-trench inspection and areas to be inspected.	Same as above
e. Decide other matters as needed at this phase of the MOA procedure.	Same as above
6. Treatment/Data Recovery	Responsible Party:
a. Treatment plans implemented.	Applicant's Consultants
Note: There will be no commitment made to begin data recovery until after the post-testing conference.	
b. Progress and compliance with treatment strategies monitored.	Appropriate BLM District/ SMA

7. Monitoring/Stop-Work/Treatment of Sites Found After Construction Begins

a. Monitoring of blading and/or trenching operators in defined areas.	Responsible Party: \ Applicant's Consultants
b. Construction work stopped when cultural properties are discovered during monitoring.	Same as above
c. Discovered properties recorded to a level sufficient to evaluate them for National Register eligibility.	Same as above
d. Discovered properties evaluated and effect determined by the consulting parties. Mitigation plan determined by the consulting parties.	Consulting Parties: Appropriate BLM District or SMA Appropriate SHPO Council Representative Participants: Applicant's Consultants Other St Representative

8. Open-Trench Inspection

a. Inspection of the open pipeline trench in defined areas	Responsible Party: Applicant's Consultants
b. Discovered properties recorded and/or treated in a manner determined by the consulting parties.	Consulting Parties: Appropriate BLM District SMA Appropriate SHPO

9. Reporting/Review

a. Reporting will be completed on a state-by-state basis.	
b. Draft report of survey, testing, and evaluation prepared and submitted for review to BLM Districts/ SMAs according to the schedule developed by the consulting parties at the post-testing conference.	Responsible Party: Applicant's Consultants BLM Districts SMAs
c. Reviews of draft report consolidated by BLM Districts and forwarded to SHPO with agency request for review.	BLM Districts
d. SHPO reviews draft survey, testing, and evaluation report and sends comments to BLM Districts. Districts forward all review comments to Applicant's Consultants.	Appropriate SHPO
e. Final report of survey, testing, and evaluation prepared, taking into account review comments. Completed final submitted to BLM Districts, SMAs within 60 days of completed draft review in a given state.	Applicant's Consultants
f. Final review of the survey, testing, and evaluation report by consulting parties.	Consulting Parties: Appropriate SHPO Appropriate BLM District/SMA
g. Draft mitigation reports prepared and submitted for review to BLM Districts/SMAs per a schedule established by the consulting parties after all data recovery field work is completed.	Responsible Party: Applicant's Consultants

h. Review and revision of the draft and final mitigation reports per Item 9 C-f above.

i. Draft monitoring and open trench inspection report prepared and submitted for review to BLM Districts/SMAs with 60 days of completion field work related to monitoring and/or open trench inspection in a given state. — Applicant's Consultants

j. Review and revision of the draft and final monitoring and open trench inspection report per Item 9c-f above.

k. A final synthetic report compiled for the entire pipeline and submitted to the BLM lead District. — Applicant's Consultants

10. Documentation of Curation and a Record of the Disposition of Privately Owned Cultural Materials submitted to Appropriate BLM Districts — Applicant's Consultants

11. National Register Forms Completed for Eligible Properties Retaining the Qualities which made them Eligible. — Applicant's Consultants

12. Formal Determinations of Eligibility Sought From the Keeper. — Appropriate BLM District/SMA

13. Reporting Fulfillment of the Agreement — CDO, BLM

A summary report of all actions taken to fulfill the terms of the agreement submitted to all signatories with 90 days of completion of all terms of the agreement.

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